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September 1955

MARKETING EFFICIENCY in a Changing Economy

A Report of
the National
Workshop on
Agricultural
Marketing

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of Kentucky

UNITED STATES DEPARTMENT OF AGRICULTURE

Agricultural Marketing Service
AMS-60

Washington 25, D. C.

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Stanley K. Seaver

INTRODUCTION

The specific purpose of the 1955 Workshop was to improve the effectiveness of work dealing with efficient utilization of marketing resources by providing for those engaged in such work the opportunity to strengthen their professional competence. It was the third of a series of three marketing workshops designed to increase the effectiveness of research, service and educational work in agricultural marketing by providing participants in related programs with the opportunity to clarify objectives, improve methodology, and exchange views on the respective types of professional activities. Special attention was given to the contributions of and interrelationships among research, service and educational agencies in the solution of specific marketing problems. When it is recognized that the investment in market resources used to take products from farms to consumers rivals the investment in farms, the importance of subject matter of the Workshop can be better appreciated.

Emphasis given to marketing work by the Research and Marketing Act of 1946 created a need for closer relationships among the staffs of public agencies conducting programs to assist and improve agricultural marketing. It also called for better coordination of research, educational and service activities, all of which were provided for by the Act. In response to these needs, workshops were sponsored by the Joint Land-Grant College - USDA Committee on Training for Government Service, then under the co-chairmanship of C. E. Friley, former President of Iowa State College, and T. Roy Reid, former Director of Personnel of the Department of Agriculture.

At the recommendation of this Joint Committee, marketing research workshops were held annually from 1949 to 1952. Following the 1952 Workshop, as described in the report of the 1953 Workshop, a committee developed plans for broadening the scope of the workshops to provide more opportunity for exchange of ideas between those engaged in marketing research and those doing educational and service work in the marketing of agricultural products. A sequence of 3 workshops in this broader setting were planned as follows:

1. In 1953 in a Western State on the topic: "Modernizing Market Organization, Structure and Facilities."

2. In 1954 in a Northeastern State on the topic: "Developing and Applying Information for Effective Buying and Selling."

3. In 1955 in a Midwestern or South Central State on the topic: "Obtaining Efficient Use of Labor, Equipment and Other Market Resources."

The membership of the Committee for the 1955 Workshop, appointed by the co-chairmen of the Joint Committee on Training, was:

Aubrey J. Brown, Head, Department of Agricultural Economics University of Kentucky, Lexington, Ky. - Chairman

G. S. Abshier, Agricultural Extension Service, North Carolina State College, Raleigh, N. C.

M. E. Brunk, Department of Agricultural Economics, Cornell University, Ithaca, N. Y.

George Chick, Chief, Division of Markets, Maine State Department of Agriculture, Augusta, Me.

W. C. Crow, Marketing Research Division, and Liaison, Commissioners of Agriculture, Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C.

Barnard Joy, Assistant to the Administrator, Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.

Gladys E. Vail, Head, Department of Foods and Nutrition, Purdue University, W. Lafayette, Indiana

S. T. Warrington, Agricultural Economics Programs, Federal Extension Service, U. S. Department of Agriculture, Washington, D. C.

Harry C. Trelogan, Director, Marketing Research Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C. - Consultant

A. W. True, Assistant to the Director, Marketing Research Division, Agricultural Marketing Service, U. S. Department of Agriculture, and Barnard Joy, Assistant to the Administrator, Agricultural Research Service, U. S. Department of Agriculture, served jointly as executive secretary of the Workshop and as secretary of the Committee.

Experiment Station Directors in 26 States responded to this invitation by sending 49 representatives; Extension Directors in 26 States sent 53 representatives; Commissioners of Agriculture in 11 States sent 20 representatives; the Canadian Department of Agriculture and the Ontario Agricultural College each sent one representative; Puerto Rico sent 1 Extension representative, 2 Department of Agriculture representatives, and 1 Experiment Station representative; Hawaii sent 1 Extension representative. Five Federal agencies sent 46 representatives. These 175 persons with 41 members of the University of Kentucky staff made up the group of 216 who were members of the Workshop. In addition, there were 7 speakers and others who were unable to participate significantly in the work group sessions.

Background material that stimulated the thinking of the group was given in 14 presentations made at 12 general sessions. Approximately three-fourths of the 16 hours spent in these general sessions was devoted to presentations by speakers and one-fourth to questions and discussion from the floor.

The membership of the Workshop was divided into 13 work groups. Each of these groups had 12 sessions totaling 22 hours. The secretary of each group prepared a report on the topic considered by the group. The last general session was devoted to presentation of these reports.

Several tours, a picnic, and 3 dinner meetings provided opportunity to take advantage of some of the many interesting resources available at or near the University of Kentucky. Some of these were not directly related to marketing. An important characteristic of the Workshop was its flexibility. Fourteen ad hoc meetings and activities were scheduled for those who had a common interest in a particular problem.

In addition to providing transportation and very excellent accommodations for meetings, meals and lodging, the University of Kentucky staff under the leadership of Aubrey J. Brown, chairman of the Committee on Local Arrangements, provided for a variety of recreational activities. Mrs. Gertrude M. Farmer, who served as secretary for the Workshop, was assisted by several of the secretaries at the University who did all the duplicating work of the presentations made at the general sessions.

At its final session the Workshop adopted resolutions expressing appreciation to the Experiment Station Committee on Organization and Policy and the Extension Committee on Organization and Policy, to the Commissioners, Secretaries and Directors of State Departments of Agriculture and to the Agricultural Research Policy Committee of the U. S. Department of Agriculture for endorsing the Workshop; to the University of Kentucky and members of its staff for the fine accommodations, for contributions to the program and for its generous hospitality and to the State Experiment Station Directors, Extension Directors and Commissioners of Agriculture, and Agency Heads for making possible the attendance of members of their staffs.

The following report of the Workshop includes the papers presented at the general sessions as they were submitted by the speakers for reproduction. It also includes reports of the discussions in the individual work groups as submitted by work group secretaries, who were individually responsible for summarizing the work group discussions.

PROGRAM

Thursday, June 16

8:30 p. m. Social Hour . . . . Donovan Hall

Friday, June 17

8:00-10:00 General Session . . . . Guignol Theater
Fine Arts Building

Chairman Aubrey J. Brown, Head
Dept. of Agricultural Economics
University of Kentucky

Plans for Work Group Meetings
Barnard Joy
Assistant to the Administrator
Agricultural Research Service, USDA

Application of Principles of Production Economics to Achieve Efficiency in Marketing
L. L. Boger, Head
Dept. of Agricultural Economics
Michigan State College

10:15-12:00 Work Group Meetings

Work Group I . . . . Room 203
Home Economics Building

Underlying Objectives of Marketing Efficiency Programs

Leader Robert L. Clodius
Associate Professor of Agricultural Economics
University of Wisconsin

Secretary Winn F. Finner, Associate Chief
Market Organization and Costs Branch
Marketing Research Division, AMS, USDA

Consultants L. L. Boger, Head
Dept. of Agricultural Economics
Michigan State College

Willard W. Cochrane
Professor of Agricultural Economics
University of Minnesota

Friday, June 17 (continued)

Work Group II . . . . Room 105
Home Economics Building

Assembly and Packing Operations at Country Plants

Leader	James F. Herrick Transportation and Facilities Branch Marketing Research Division, AMS, USDA
Secretary	Eric Thor Associate Professor of Agricultural Economics University of Florida

Work Group III . . . . Small Dining Room #1
Donovan Hall

County Auction Market Facilities and Arrangements

Leader	Jack D. Johnson Associate Professor of Agricultural Economics Virginia Polytechnic Institute
Secretary	S. T. Warrington Extension Economist Federal Extension Service, USDA

Work Group IV . . . . Room 205
Student Union Building

Improving Storage and Transportation and Maintaining Quality of Grain and Other Commodities

Leader	Geoffrey Shpeherd Professor of Agricultural Economics Iowa State College
Secretary	Merrill Werts Director, Marketing Division Kansas State Board of Agriculture

Work Group V . . . . Small Dining Room #4
Donovan Hall

Efficiency of Dairy Product Preparation and Distribution

Leader	John B. Roberts Associate Professor, Agricultural Marketing University of Kentucky
Secretary	Hugh L. Cook Associate Professor of Agricultural Economics University of Wisconsin

Friday, June 17 (continued)

Work Group VI	Room 204 Student Union Building

Improving Wholesaling and Retailing

Leader	Raymond W. Hoecker, Head Wholesaling and Retailing Section Marketing Research Division, AMS, USDA
Secretary	Stanley E. Rosenberger Extension Vegetable Marketing Specialist University of Florida
Consultants	Stephen A. Douglas, Director Advertising and Sales The Kroger Company Cincinnati, Ohio
	Frederick C. Winter, Associate Professor Industrial Engineering Columbia University
	Ivan Jett Director of Kentucky Chain Store Council Georgetown, Kentucky

Work Group VII	Room 216 Fine Arts Building

Ascertaining Quality and Service Demands

Leader	Lloyd H. Davis Associate Professor of Marketing Cornell University
Secretary	Gladys E. Vail, Head Department of Foods and Nutrition Purdue University
Consultant	J. Stevens Stock Alfred Politz Research, Inc. New York City

Work Group VIII	Room 128 Student Union Building

Selling New Products, Services and Ideas

Leader	Shelby A. Robert, Jr., Head Product Development Section Marketing Research Division, AMS, USDA
Secretary	Martin D. Woodin Professor of Agricultural Economics Louisiana State University

Friday, June 17 (continued)

Consultant	Charles W. Hardin Professor of Political Economy University of Chicago

Work Group IX . . . . Room 218
Fine Arts Building

Relation of Fruits and Vegetables Quality Maintenance to Marketing Efficiency

Leader	George H. Chick Chief, Division of Markets Maine State Department of Agriculture
Secretary	Wilbur A. Gould Associate Professor of Horticulture Ohio State University
Consultants	C. W. Kitchen, Executive Vice President United Fresh Fruit and Vegetable Association Washington, D. C.
	Wilbur T. Pentzer, Chief Biological Sciences Branch Marketing Research Division, AMS, USDA

Work Group X . . . . Small Dining Room #3
Donovan Hall

Relation of Poultry and Egg Quality Maintenance to Marketing Efficiency

Leader	Thomas C. Morrison Assistant Professor of Agricultural Economics University of Connecticut
Secretary	George H. Goldsborough Liaison Office, State Department of Agriculture Agricultural Marketing Service, USDA
Consultant	R. Frank Frazier, Executive Vice President National Broiler Council Richmond, Virginia

Work Group XI . . . . Room 212
Dairy Building

Developing A Local Area Marketing Program for A County With A Large Urban Population (Jefferson County, Kentucky)

Leader	Paul L. Koenig, Assistant to Director Agricultural Estimates Division, AMS, USDA

Friday, June 17 (continued)

Secretary	Loa D. Whitfield, Extension Specialist Consumer Food Marketing Ohio State University
Consultants	Maurice C. Bond, Director Cooperative Extension Service Cornell University
	William C. Crow, Chief Transportation and Facilities Branch Marketing Research Division, AMS, USDA

Work Group XII . . . . Room 109, Dairy Building

Developing A Local Area Marketing Program in A Rural County Where Several New Crops Are Being Produced (Pulaski County, Kentucky)

Leader	J. E. Youngblood, Chief Extension Division of Marketing Clemson Agricultural College
Secretary	Carlton E. Wright Extension Economist in Marketing Cornell University
Consultant	Kenneth L. Bachman, Head Production, Income and Cost Section Production Economics Research Branch, ARS, USDA

Work Group XIII . . . . Room 113, Dairy Building

Developing A Local Area Marketing Program for A General County (Henderson County, Kentucky)

Leader	George S. Abshier Extension Marketing Specialist North Carolina State College
Secretary	Clyde R. Cunningham District Extension Marketing Agent Lapeer, Michigan

Friday, June 17 (continued)

1:15-2:45 General Session . . . . Guignol Theater
Fine Arts Building

Chairman Wilson M. Routt
Assistant Commissioner
Kentucky Department of Agriculture

Market Structures Today and Tomorrow
William C. Crow, Chief
Transportation and Facilities Branch
Marketing Research Division, AMS, USDA

3:00-4:15 Work Group Meetings

6:30-8:30 Dinner Ball Room, Student Union

Chairman Frank J. Welch, Dean
College of Agriculture
University of Kentucky

Greetings Leo M. Chamberlain, Acting President
University of Kentucky

Speaker R. Frank Frazier, Executive Vice President
National Broiler Council
Richmond, Virginia

Saturday, June 18

8:00-9:45 Work Group Meetings

10:00-12:00 General Session Guignol Theater
Fine Arts Building

Chairman Ernest J. Nesius
Associate Director of Extension
University of Kentucky

Panel on Research, Service and Educational Work Relating to Marketing, Efficiency . . . Research
R. W. Rudd
Department of Agricultural Economics
University of Kentucky

Extension

Robert C. Kramer
Department of Agricultural Economics (Extension)
Michigan State College

Saturday, June 18 (continued)

Service

Donald E. Wilkinson, Chief, Markets Division
Wisconsin State Department of Agriculture

1:15-8:30	Bluegrass Tour and Picnic	

Sunday, June 19

1:30-9:30	Trip to Natural Bridge and Dinner at Cumberland National Forest Lodge	

Monday, June 20

8:00-9:45	General Session	Guignol Theater Fine Arts Building
Chairman	Miriam J. Kelley, Leader Home Demonstration Work (Marketing and Consumer Education), Michigan State College	

Probing to Ascertain the Nature of Consumer's Demand
J. Stevens Stock
Alfred Politz Research, Inc.
New York City

Retailers' Response to Changing Consumer Habits
Stephen A. Douglas
Director of Advertising and Sales
The Kroger Company
Cincinnati, Ohio

10:00-12:00	Work Group Meetings	
1:15-3:15	Work Group Meetings	
3:45-	Ad Hoc Groups	Small Dining Rooms Donovan Hall

1. Public and Private Responsibility in Marketing
   Homer Evans, Chairman

2. Improving Efficiency in Marketing Cooperatives
   Marvin A. Schaars, Chairman

3. Quality Standards and Grading
   Melvin Buster, Chairman

4. Proposed Program for Low-Income Farmers
   Robert E. Galloway, Chairman

Monday, June 20 (continued)

6:00-8:30	Section Dinners for Experiment Station, Extension Service and State Departments of Agriculture Workers	

Tuesday, June 21

8:00-9:45	General Session	Guignol Theater Fine Arts Building
Chairman	Henry G. Hamilton, Head Department of Agricultural Economics University of Florida	

Horizons in Marketing
Nathan M. Koffsky, Chief
Farm Income Branch
Agricultural Economics Division, AMS, USDA

Adjustments in Marketing to Capitalize on New Technology
Harry C. Trelogan, Director
Marketing Research Division
Agricultural Marketing Service, USDA

10:00-12:00	Work Group Meetings	
1:15-3:15	Work Group Meetings	
3:45-	Ad Hoc Groups	Small Dining Rooms Donovan Hall

1. Consumer and Producer Interest in Marketing Work
   Elsie H. Dawson, Chairman
2. Meat Marketing (meat type hogs, demand for meat)
   James W. Reynolds, Chairman
3. New Developments in Milk Market Order Programs
   Elmer F. Baumer, Chairman
4. Horizons in Marketing--New Technology (further discussion of talks by Koffsky and Trelogan)
   Wilmer Browning, Chairman

Wednesday, June 22

8:00-9:45	General Session	Guignol Theater Fine Arts Building
Chairman	J. R. Bowring Associate Professor of Agricultural Economics University of New Hampshire	

Wednesday, June 22 (continued)

Balancing Labor, Equipment, and Other Resources to Obtain Maximum Efficiency

Frederick C. Winter, Associate Professor of Industrial Engineering
Columbia University

Discussants

Loy L. Sammet
Specialist in Experiment Station
Division of Agricultural Economics
University of California

George B. Byers
Economist in Farm Economics
University of Kentucky

10:00-12:00 Work Group Meetings

1:15-3:15 Work Group Meetings

3:45 - Ad Hoc Groups — Small Dining Rooms, Donovan Hall

1. Balancing Resources (further discussion of talk by Fred Winter)
   John C. Winter, Chairman

2. Institutional Barriers to Efficient Marketing
   Richard L. Kohls, Chairman

3. Methods of Presenting Consumer Marketing Information
   Irene Wolgamot, Chairman

Thursday, June 23

8:00-9:45 General Session — Guignol Theater, Fine Arts Building

Chairman

Charles F. Shelnut
Assistant Commissioner of Agriculture
Massachusetts Department of Agriculture

Advances in Quality Maintenance During Marketing

Wilbur T. Pentzer
Chief, Biological Sciences Branch
Marketing Research Division, AMS, USDA

Inducing Trade Acceptance of Research Results

C. W. Kitchen, Executive Vice President
United Fresh Fruit and Vegetable Association
Washington, D. C.

10:00-12:00 Work Group Meetings

Thursday, June 23 (continued)

1:15-3:15	Work Group Meetings	
3:45-	Ad Hoc Groups	Small Dining Rooms Donovan Hall

1. Quality Maintenance During Marketing (further discussion of Pentzer talk)
   L. E. Farmer, Chairman
2. Inducing Trade Acceptance of Research Results (further discussion of Kitchen talk)
   Lew Norwood, Chairman

6:30-8:30	Dinner	Ball Room, Student Union

Friday, June 24

8:00-9:45	General Session	Guignol Theater Fine Arts Building

Chairman
E. J. Working, Chairman
Department of Agricultural Economics
State College of Washington

Political and Institutional Barriers to Efficient Marketing
Charles M. Hardin
Professor of Political Economy
University of Chicago

Public and Private Responsibility in Marketing
Willard W. Cochrane
Professor of Agricultural Economics
University of Minnesota

10:00-12:00	Work Group Meetings	
1:15-3:15	General Session	Guignol Theater Fine Arts Building

Chairman
William H. Dankers
Extension Economist
Division of Agricultural Economics
University of Minnesota

Report of Work Groups by Respective Secretaries

Report of Resolutions Committee by the Chairman
Marvin A. Schaars
Department of Agricultural Economics
University of Wisconsin

Summary of Workshop
Stanley K. Seaver
Associate Professor of Agricultural Economics
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Byers, George B.	Economist in Farm Economics University of Kentucky Lexington, Kentucky	Member of Work Group II

Chamberlain, Leo M.	Acting President University of Kentucky Lexington, Kentucky	Welcome address at dinner session June 17
Chick, George H.	Chief, Division of Markets Maine State Department of Agriculture Augusta, Maine	Member of Planning Committee and Com. to review Agrl. Mktg. Workshops; Leader Work Group IX
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Clark, Harold B.	Assoc. Professor of Agrl. Economics University of Kentucky Lexington, Kentucky	Member of Work Group VI
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Cochrane, Willard W.	Professor of Agrl. Econ. University of Minnesota University Farm St. Paul, Minnesota	Speaker, General Session, June 24; Consultant to Work Group I
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Cole, T. W.	Veterinarian, Animal Disease Eradication Branch Agrl. Res. Service, USDA Washington 25, D. C.	Member of Work Group III
Cook, Hugh L.	Assoc. Professor of Agrl. Economics University of Wisconsin Madison, Wisconsin	Secretary of Work Group V

Coville, E. V.	Asst. Director, Div. of Markets, Virginia Dept. of Agr. & Immigration Richmond, Virginia	Member of Work Group XI
Criswell, James E.	Asst. Economist in Agrl. Economics University of Kentucky Lexington, Kentucky	Member of Work Group XIII
Crow, Wm. C.	Chief, Transportation and Facilities Branch, Mktg. Res. Division, AMS, USDA Washington 25, D. C.	Member of Planning Com.; Speaker at General Session June 17; Consultant Work Group XI
Cunningham, Clyde R.	District Marketing Agent State Extension Service Michigan State College Federal Building Lapeer, Michigan	Secretary of Work Group XIII
Dankers, Wm. H.	Extension Economist Institute of Agriculture University of Minnesota St. Paul, Minnesota	Member of Work Group XIII; chm. General Session June 24
Davis, Lloyd H.	Assoc. Professor of Marketing Dept. of Agrl. Economics Cornell University Ithaca, New York	Leader of Work Group VII
Dawson, Elsie H.	Head, Food Quality & Use Section, Human Nutrition Research Branch, ARS, USDA Beltsville, Maryland	Member of Work Group IX; chairman Ad Hoc Session
De Cuir, Walter	State Supervisor, Dairy & Poultry Division Louisiana State Department of Agriculture Baton Rouge, Louisiana	Member of Work Group X
Dougherty, Lawrence	Extension Econ. in Marketing University of New Hampshire Durham, New Hampshire	Member of Work Group XII
Elliott, William H.	Agricultural Economist Transportation & Facilities Branch, Mktg. Res. Div., AMS, USDA Washington 25, D. C.	Member of Work Group I

Erwin, C. C.	Asst. Econ. in Agrl. Mktg. University of Kentucky Lexington, Kentucky	Member of Work Group VIII
Evans, Homer C.	Asst. Agrl. Economist West Virginia University Morgantown, West Virginia	Member of Work Group VI; chairman Ad Hoc Session
Faller, Marvin A.	Exec. Sec'y, Louisiana State Market Commission Louisiana Department of Agr. & Immigration Baton Rouge 4, Louisiana	Member of Work Group III
Farmer, Gertrude M.	Adm. Assistant to Harry C. Trelogan, Marketing Res. Div., AMS, USDA Washington 25, D. C.	Secretary of the Workshop
Farmer, L. E.	Ext. Agrl. Econ. in Mktg. University of Georgia Athens, Georgia	Member of Work Group XI; chairman of Ad Hoc Session
Farmer, Wilfred I.	Field Agent in Fruit & Vegetable Marketing University of Kentucky Lexington, Kentucky	Member of Work Group IX
Fenger, George A.	Inspector, Mississippi Dept. of Agriculture (Dairy) Jackson, Mississippi	Member of Work Group V
Feustel, Irvin C.	Utilization Ext. Specialist in Fruits & Vegetables Western Utilization Research Branch Federal Extension Service, USDA Albany, California	Member of Work Group VIII
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Finner, Winn F.	Asst. Chief, Mkt. Org. & Costs Branch, Mktg. Res. Div., AMS, USDA Washington 25, D. C.	Secretary of Work Group I
Flemming, W. R.	Ext. Marketing Specialist Clemson Agrl. College P. O. Box 1463 Columbia, South Carolina	Member of Work Group VII

Flitcraft, Hill	Ext. Agent in Food Marketing College of Agriculture Rutgers University New Brunswick, New Jersey	Member of Work Group XI
Ford, K. E.	Assoc. Agrl. Economist Georgia Agricultural Experiment Station Experiment, Georgia	Member of Work Group XI
Frazier, R. F.	Executive Vice President National Broiler Council Richmond 3, Virginia	Speaker at Dinner Session June 17; Consultant to Work Group X
French, B. C.	Asst. Professor of Agrl. Econ. Michigan State College East Lansing, Michigan	Member of Work Group II
Frye, Robert E.	Agricultural Economist Market Development Branch Mktg. Res. Div., AMS, USDA Washington 25, D. C.	Member of Work Group VII
Fuqua, Joe	Asst. in Agrl. Economics University of Kentucky Lexington, Kentucky	Member of Work Group XIII
Galloway, Robert E.	Social Science Analyst Agrl. Econ. Div., AMS, USDA Dept. of Agrl. Economics University of Kentucky Lexington, Kentucky	Member of Work Group XII; chairman of Ad Hoc Session
Garland, E. C., Jr.	Mktg. Agent, Div. of Markets State Department of Agriculture and Immigration Richmond, Virginia	Member of Work Group II
Gaylord, F. C.	Asst. Chief Horticulture (Marketing) Purdue University Lafayette, Indiana	Member of Work Group IX
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Presentation at General Session
Friday Morning, June 17

APPLICATION OF PRINCIPLES OF PRODUCTION ECONOMICS TO ACHIEVE EFFICIENCY IN MARKETING

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In 1952 I had the opportunity to participate in the National Marketing Workshop held on the campus of Texas A and M in College Station, Texas. Since then I have been impressed with the contributions that a workshop of the nature of this can make to the professional workers in the field of marketing. Much can be gained by getting a group of competent persons together in an environment such as these workshops provide where a sufficient period of time is devoted to difficult or pressing problems. The general subject this year, "Marketing Efficiency in a Changing Economy," is especially intriguing to me. First of all, I have too felt that many studies of marketing have been confined to a static or non-changing setting. The title of this year's workshop implies that we are going to focus on a dynamic economy. This places the subject in a more realistic perspective, even though it poses more difficult problems for empirical study. Management decisions are made in a changing environment, therefore, it is especially relevant that we consider those aspects of any discipline which can make a contribution to the achievement of efficiency in a changing economy.

As one looks into history on the application of economics to agriculture, those making the application to the farm sector began in a very modest way. I remember Howard Tolley's Statement at the Washington meetings of the American Farm Economic Association that his first assignment as an agricultural economist in the Department of Agriculture was to compute the amount of silage that silos of various heights and diameters would hold. From undramatic beginnings such as these, the recognized contributions of agricultural economists to all of agriculture--both production and marketing--have become apparent. The theoretical aspects of marginal analysis, synthesized for greater applicability by Alfred Marshall, became more widely used. The contributions of H. C. Taylor, W. J. Spillman and John D. Black were notable. These were emerging and being accepted about the same time that agricultural marketing problems began to draw attention at state and national levels.

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Agricultural economists interested in farm management research have in recent years recognized the tremendous gap between practical problems and principles which emerge from static marginal analysis and have begun to pay more and more attention to dynamic problems facing the farm sector of our agricultural economy as a whole as well as the problems of a dynamic nature associated with the individual farm firm. Marketing people, with few exceptions, seem to be getting along pretty well with the application of static principles and have not, as yet, moved aggressively into the field of dynamics. One of the stumbling blocks to the growing into marketing research and educational work in the same manner as we grew into the field of farm management is that our theories are not equally applicable. For example, production economics can be divorced more fully from consumption economics in the analysis of problems at the farm level since more of the elements of perfect competition apply, while many of the marketing firms operate in less competitive situations where consumption economics must of necessity be closely tied in with production economics. This will be covered in more detail later.

We could spend the entire time allotted to us discussing terms such as production, marketing and efficiency. I do not propose that we allocate our time this way but perhaps we should spend a little time to clarify in part the confusion that commonly exists in the use of the terms. In economics, the term production is defined to include both:

a. The rendering of saleable direct services and,
b. The imparting of sale value to goods, direct or indirect.

This classification would consider time, place and possession utility to be a part of (a) and form utility which would be a part of (b). This usage is somewhat different from that in common practice. In economic literature time, place, and possession utility is considered to be a part of production so long as it adds value to the goods in question. This means that the production of services such as storage, transportation, financing and selling are as much a part of the production process as the production operations of agriculture or manufacturing. The term marketing often includes the creation of all the utilities mentioned but is restricted to the area between the farm and the consumer. The term production on the other hand is not restricted by the same boundaries. The title of this paper - "The Application of Principles of Production Economics to Achieve Efficiency in Marketing"- allows us to use the economic definition of production and the traditional definition of marketing. Thus, in this paper, the term production will be used in the all-inclusive sense. When the term marketing is used it will be restricted to that area bounded by the farm on the one hand and the consumer on the other.

The term efficiency will be used in the traditional economic sense, however, it is recognized that it may be difficult to measure in some cases and perhaps inconsistent with individual and total welfare goals and objectives in another sense. As was pointed out in Readings in Agricultural Marketing, "the concept of efficiency is fairly clear when studying detailed processes such as that of putting celery into a crate. But macro-efficiency is a difficult concept. What do we mean by the efficiency of the whole marketing system? What standards have we for measuring them?

"The plain fact is that the concept of macro-efficiency is rather vague and cannot be measured accurately by statistics. The economists cannot determine 'the optimum use of resources' in any absolute sense. Nor can he devise a marketing structure which will at the same time reach such conflicting goals as maximum farm income, minimum cost to the consumer, and minimum expenses for transportation for marketing. This does not excuse the economist from his duty to make improvements in efficiency. It means only that this is a job requiring a great deal of judgment. In the final analysis, the citizens determine what use of resources they think is best. The economist can supply information and can help the public understand the probable results of alternative actions." (10).

Decision Making and Management

In this paper I want to discuss briefly not only the application of principles of production economics to marketing but also some of the methods or techniques by which they can be applied. First let us ask, "Why are we interested in this subject?" One answer would be: To help managers or administrators make decisions--decisions regarding the economic consequences of alternative actions. These need not apply only to decisions within a firm, but to an industry as a whole or, for that matter, to all industries. Moreover, the knowledge gained from the application of production economic principles can help to explain events in an historical perspective, but likely is most useful as an aid to forecast possible outcomes.

The two kinds of production decisions that marketing managers or administrators must make can be classified as follows:

a. What products (including services) to produce? and,
b. How much to produce?

Under (a), questions of choice arise. Should one product, a few products, or many products be produced? What kinds of inputs and how much of each is needed for any production pattern? In what combination should any group of products be produced?

Under (b) the question of scale is raised. How much of each product should be produced and how much of any combination of products should be produced?

These questions of choice and scale arise at all levels--the firm, the industry, and the aggregate. Obviously, there exists wide variation in the expediency with which decisions can be implemented at each level because of the different environments that exist for managers or administrators. A manager of a grocery store, a grain elevator, a cotton gin, or a tobacco warehouse usually has authority to make decisions that result in immediate action. As the administrative hierachy grows to include more than one firm it becomes more difficult to get action on decisions even though control is centralized. If several owners are involved, policy recommending associations or advisory committees do not have direct lines of authority and therefore decisions and recommended actions may be slowly implemented. Administrators of marketing action programs created by legislation can and do effect decisions that get translated into action with great efficiency. These can affect the entire marketing structure for a commodity, for groups of commodities, and for all of agriculture. Operations of the Commodity Credit Corporation that result in the buying, storing, selling and financing of a product is an example. The recent action of the food and drug administration on rodent and mercury contaminated grain is another case in point. The Federal Trade Commission through its regulatory activities can also have important effects upon over-all marketing activities These government agencies are producing services and therefore certain principles of production economics can serve as guides to their actions just as they do in the private field.

A further statement or two on the effects of time on the application of principles of production economics to marketing may be appropriate at this point. In economics we have one body of principles and theory that helps to explain optimum points of production in a non-changing or static framework. With any change in the elements of prices or costs, an immediate adjustment is brought about in the outcome. All other things remain the same. This is a familiar statement to all students of static economics. Actually, any theory falls into the department of oversimplification; but dynamic simplifications are different from static. They include tendencies toward equilibrium. In most cases they never reach their static limits, therefore precise completeness usually turns out to be something hoped for but seldom, if ever, reached. (5) Nonetheless, the dynamic theories and principles have something to contribute to those making decisions, but the precision with which they are stated may leave false impressions regarding the extent of their usefulness. Also, because of their nature, dynamic theories are not as fully developed as static theories.

Production Economic Principles

Let us now turn our attention to a discussion of some of the principles of production economics that may have useful application to marketing. The simplest point of departure is a marketing firm producing one product with only one variable factor of production. Here the principles of specialization apply. Under this set-up, we know that the amount of product which is produced as units of an input is added increases at first, then eventually decreases. We know that the optimum range in production lies between the point of maximum average production in a physical sense and the point where an additional unit of input results in no addition to the total product. The precise economic optimum however cannot be determined without considering the price of the product and the cost of the input. Knowing these, the economic optimum point of production falls at that point where the value of the last unit of product produced is equal to the cost of adding it.

This concept can be extended easily to include a second variable input. Knowing the physical input-output relationships, the price of the product and the cost for each of the inputs we can determine how much to produce (the scale of operations) and how much of each input to use. Stated in marginal terms again, this point is reached when the value of the last unit produced by each variable input is equal to its cost. Similarly, this can be extended to many variable inputs so long as the product remains the same and perfect competition exists in factor and product markets.

The appropriate production function concept, i.e. single, two-variable, etc., for a given situation depends upon the number of inputs that a manager is trying to manipulate. The list that a manager wants to vary and the list that he desires to leave fixed determines the relevant length of run or planning span. (3).

If either of the markets for inputs or outputs is imperfect, adjustments in the appropriate prices or costs must be made. These are complicating factors and a knowledge of the respective demand functions is necessary for complete analysis. The gains from specialization are many. Our complex commercial economy is built in large part upon specialization. Trade is essential to specialization and specialization has lead to greater efficiency. Other advantages are apparent as we observe what has been going on about us. Remarkable skills are achieved by persons sorting fruits and vegetables along a moving belt, running a packaging machine in a cereal factory while someone else transports the cartons, buying a raw product while the responsibility for performing other functional services rests with others. High natural ability can be made considerably more productive by the use of machines or by combination with less skilled labor. Properly combined these skills and talents lead to greater efficiency.

There are dangers to overspecialization that are associated with mental or physical fatigue factors. Also, monotonous repetition associated with the specialization of human labor may be a deterrent to the development of new, more efficient methods.

Other disadvantages may be less mental or physical and more economic. For example, a firm may lose business because customers cannot obtain commodities or services from the firm due to its specialization. Important elements of dynamics may also be involved in that managers are required to keep up with the changing times. Also, there are problems of instability that are associated with specialization.

On the one hand we are made to appreciate the gains from specialization. In merchandising we have special stores for men's clothing, women's shoes, candies and sweets, radios, phonograph records, and cheeses. We have specialized transportation systems, specialized warehouses for storage, specialized inspectors for grading. On the other hand we see managers of grain elevators get the urge to combine a farm supply business with their grain handling businesses. Think of the different lines of goods handled in our modern food supermarkets. It is not uncommon now to be able to purchase everything from a can of beans to kitchen utensils, house plants, charcoal and toiletries in our food stores. These lines are supplementary to the main lines handled by the market and may have sound economic justification for their being.

Why do managers get the urge to diversify? What are some of the principles of production economics that apply? Diversification can be advocated on the basis of two needs:

1. The need to add enterprises in order to use resources more completely.
2. The need to scatter or divide the use of resources for the sake of distributing risk. (3)

If a manager decides to add a second enterprise in order to use his resources more fully, he could proceed to decide how much of each to produce in much the same way as he would to decide how much of each of two inputs to use in the production of a single product. Knowing the production functions for each enterprise, using the same set of variable factors in each but different fixed factors, he could develop the appropriate cost curve. In this case it is an iso-cost curve. This represents the various amounts of each product that can be produced at the same cost. Given the prices for each of the products, the amount of each product that should be produced then can be determined. Stated in words, we can say that two or more products are produced in proper proportions for a given cost, when the marginal value products of all variable inputs are equal to their respective prices in the production of the products being produced. Again, the length of run or planning span is defined by the fixed factors invested in it.

These principles apply to any enterprise which is only limited by definition to a line of production necessitating individual and distinct production treatment. The outcome of different lines typically may be:

1. A single product (cigarettes from tobacco)
2. Two or more products of equal importance (cube steak and hamburger from the round)
3. A main product with by-products (flour and bran from wheat)

Whatever the outcome the principles outlined above hold but their application becomes more or less complex.

The other stated reason for diversification was to reduce risk. Diversification can reduce the risk associated with a crop failure. A cherry processing plant may stand idle if nature destroys the crop in a particular year. By extending its processing activities to other fruits, risk may be reduced. Diversification can spread the kind of risk that is associated with changes in relative prices and thereby result in a more stable income situation.

Progress in Application of Principles and Techniques

As was pointed out earlier, if we were to appraise the progress that has been made in the application of these principles to marketing, we could say that more progress has been made at the firm level than in the aggregate. John D. Black elaborated on this at the American Farm Economic Association meetings last year when in essence he stated that.. ..much progress can be made in the application of economics to problems of marketing systems as a whole. This area and changes in it have affected marketing tremendously in the past several years. To demonstrate this we could point out the growth that has been in the private field, first of the chain store systems and later of the supermarket systems. Then, also, there has been some parallel growth in the cooperative field.

In addition to taking this broad view of our marketing system, we could take a closer look at the marketing functions in total. Here we would deal with problems of handling, buying and selling (adding different kinds of utilities) all the way from the producer to the consumer, and analyze these step by step. In the Harvard Marketing Studies Series, one of their publications was devoted to the functions of buying and selling. However, this is one of the few examples of over-all aggregative research in the field of marketing.

Other situations in which research in marketing systems as a whole, and marketing organizations, is likely to be productive, are those in which changes are under way that call for readjustments in marketing. (2). These may be changes in production, transportation, processing, distribution or consumption. Examples of changes in production that serve as illustration are the shift toward livestock in the South, or away from so much cotton or small grain in some parts of the South or West, or toward more poultry in an area. The present arrangements for selling cattle may be very inadequate as cattle numbers double and triple. It may not be more auction markets that are needed, but fewer of them much better organized and better located. (2). The shift away from cotton may call for substituting fewer modern efficient cotton gins for many more outdated ones. The change from hand to machine picking of cotton may also call for revision of ginning and marketing. In other words, the application of changing technology on farms and production of products may call for radical adjustments in marketing.

Much is needed, also, in the area of commodity analysis at the over-all level. For example, suppose that a new product is developed from milk. For the sake of illustration let us suppose that an acceptable dry whole milk powder is developed which can be reconstituted and substituted for fresh fluid milk. What would an innovation like this mean to our marketing system? City routes may disappear. Health regulations which are so important in the distribution of fluid milk may not be at all important in the distribution of a dry whole milk powder. With the drastic revision that would naturally follow, in the comparative advantage of one area with another, our whole system of transportation may have to be overhauled in order to accommodate the marketing of this new product. Containers and packages may have to be completely revamped. Home refrigeration and storage space might have to be changed. We could go on and on with this as an illustration, speculating how a new product may completely change the entire production and marketing system that is presently in operation.

Let us now turn our attention from the over-all and aggregative type of study to an appraisal of the progress that has been made in helping to solve problems confronting the manager of the individual firm. Considerable progress has been made in outlining and applying principles of management in recent years. I use the term "management" very broadly. To me, management means more than the economics of combining various enterprises or the process of determining the optimum size of enterprise to follow. What are the processes of management? Any manager of a firm must, first of all, observe the relevant facts relating to the actions which are anticipated to achieve the purposes of the business. These facts must then be assembled, evaluated and analyzed. Once this is accomplished, the alternatives can be laid out and thereby form the basis for decision making, action taking and acceptance of responsibility. We might ask now, to which of these processes of management can economics make a contribution? The principles of production economics will help us to observe the right facts, some of the techniques of analysis will help us to analyze the facts. But the real contribution comes when all the alternatives are specified and form a basis for decision making. These are processes that take place through time and as such lay in the field of dynamics which is, as yet not fully developed, and for the most part unapplied in land-grant college of U. S. D. A. research. However, this is not to say that static economics does not have a contribution to make also.

The synthetic or budgeting technique is one of the most common used to apply static principles. With this method we must have actual physical input-output relationships, or, in more technical terms, we must know the physical production functions for each of the products or processes. Once these are established, prices of the different cost items or factors of production may be applied, as well as the product prices themselves, and most profitable combinations can be determined. Some of these cost items will be fixed, others will be variable, but with them the effects of changes in volume of production on cost can be determined, consistent with the principles stated earlier. The application of this technique to fruit and vegetable processing plants, milk plants, cotton gins and textiles are fairly well known. Early studies on milk in Connecticut and more recent studies on fruits and vegetables in California illustrate the point.(10) One of the criticisms of this method is that by breaking the operations down into the detail that is required with the synthetic approach, it is sometimes difficult to get them all pieced together again. This may lead to false conclusions. However, we would not be criticizing the method, we would be criticizing the researcher instead.

Other problems of the organization of a firm in this static setting can be analyzed by applying the Cobb-Douglas technique. This technique is designed to measure differences in marginal value productivities of inputs in a single enterprise firm. The technique, by its very nature, conforms to the law of diminishing returns and can help to give us answers on the use of various inputs to achieve specific outputs within the business. Also, some notion on the economical size of business is given by the scale coefficient. There have been recent attempts to make the application of this technique to the farm firm more usable by incorporating certain dynamic features into it. One of these is an attempt to adjust prices of the products for changes in the outlook.

The field of dynamics also introduces the study of problems associated with risk situations and uncertainty. How much managers discount the elements of risk and uncertainty and what effect it has upon their business operations for the most part is unknown. We do know that when managers are handling problems of uncertainty and risk, that they utilize not only principles of economics but principles of strategy as well. These strategy principles have evolved from game theory. Some of them may be enumerated as follows: (1) attempting to minimize the maximum losses that can be incurred, (2) attempting to maximize the minimum gains which can be had, and (3) attempting to incorporate certain personality strategy principles. (11). Here the manager may try to uncover intentions of the individual being dealt with, or he may try to cover up his own actions in order to confuse the person being dealt with. He may choose to follow a random non-logical course of action designed to confuse the strategy of the person being handled. He may try to conceal the intentions that he may have in order to prevent counteraction. Finally, he may try to reconstruct beliefs of the person being handled in order to better understand him and thereby develop his own course of action.

Once these strategy principles are unfolded, economics can help to determine the best course of action to follow. For example, if a manager is attempting to maximize the minimum gains which can be forthcoming, there is the problem first of determining the different gains with the different lines of action to be followed, and then selecting the one line that will maximize these gains. Budgeting and other economic analysis can be used to determine possible gains and losses. The same might be said for the strategy principle of minimizing the maximum losses that can be incurred. By budgeting the different situations where losses are involved, the minimum can be selected. These developments in the theory of games are complementing the work that has been done along these lines in economics. But there is a great undeveloped future in the integration of the game theory into economics and marketing.

One of the useful techniques which has been developed and more widely tested with problems of the farm firm has been that of linear programming or activity analysis. For the most part, linear programming accomplishes the same objective as does budgeting. Budgeting is the same general technique as programming, but it uses different computational methods. Similarities and differences were pointed out clearly by Heady in his Journal article which appeared last December. (8) He pointed out that both techniques commonly use the assumption of linearity, constant input-output ratios, hence, budgeting has some of the same limitations as linear programming and vice versa. However, there are some differences in the methods. Budgeting is seldom used to find the one unique production program out of many which gives maximum profit. Ordinarily, it is used to determine which one of two producing methods, or market organizations are best. The many alternative organizations are not examined. Budgeting could be used to determine which one of a hundred programs gives greatest return but it may be too time consuming. Linear programming has the advantage for large scale problems. It can specify the optimum program in a fraction of the time required for the more cumbersome budgeting. Hence, we could make a recommendation within limits--when the program is large scale, linear programming is a time saver--when the problem is small scale, use budgeting. Linear programming also can dig deeper into problems. Under budgeting it is seldom feasible to break down labor into months, or weeks but with linear programming, perhaps, fifty different resource groups which limit production can be specified under the optimum combination of enterprises. So there may be some real advantages to applying the same production economic principles using new techniques.

At the same time the techniques can stand some improvement. Activity analysis that relaxes linear restrictions and incorporates certain strategy principles as side restrictions opens more avenues for application. With the wide use of large scale computing equipment, much progress can be made in the application of principles of production economics to the problems confronting the individual manager of a marketing firm, or to over-all marketing problems.

This has been a rather sketchy treatment of the application of principles of production economics to achieve efficiency in marketing. For the most part the development and examples of principles were confined to the marketing firm in a static framework. A modest appraisal of progress in the application of principles and techniques was made. I hope that no one concludes from this that the science of production economics holds all of the answers to our marketing problems. However, we should not rest until we are satisfied that the fullest practical application of these principles has been made to help solve problems in the marketing of agricultural products. If this be done, then there can be no question but that our entire marketing system will be operated more efficiently. In the field of marketing there remains the opportunity for some aggressive, farsighted economist to make a real reputation for himself by pressing forward especially in the area of dynamic economics. When applied to the individual firm, some may prefer to call this the area of managerial economics. Regardless of what it is called, market managers have problems that fall into this area and that need solution. We have a responsibility as disciples of a field as broad and important as economics to keep up to date, and through our dedication to the service of agriculture make the greatest contribution possible.

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Presentation at General Session
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MARKETING STRUCTURES TODAY AND TOMORROW

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I. Introduction

- a. Story about Morris Avenue Market in 1910 and 1950
- b. All farm products move through a succession of facilities from farm to consumer
- c. The efficiency of marketing depends to a great degree upon the adequacy of these facilities
- d. Facilities may be inadequate because of
  1. Lack of them, or
  2. Their inefficiency

II. Facilities that are adequate at one time become inadequate at another due to changes in

- a. Production areas (may have adequate facilities for cotton, but not for grain)
- b. Form in which products are marketed (adequate for live poultry--not for eviscerated; adequate for fresh, but not for frozen)
- c. Methods of transportation (facilities may be adequate for horse and wagon but not for rail or truck)
- d. Population (may be adequate to serve small town but not a big city)
- e. Labor costs (a facility adequate when labor costs 75 cents per day may be inadequate with a wage of $1.50 per hour)
- f. Equipment for handling and preparing products for market (change space requirements and facility layouts)
- g. Habits of consumers, integration of firms, and other technological developments

III. When facilities do not change to meet changing conditions

- a. Marketing costs are increased
- b. They tend to be by-passed
- c. Their operators lose money and may eventually fail
- d. Both farmer and consumer are injured

IV. Some changes in city wholesale food markets

- a. Years ago city food markets consisted largely of a farmer's market with sales to consumers

1. Located near center of city
2. Often near water transportation
3. Sheds, market house, or open air

b. As cities grew and retail stores developed the old market became primarily wholesale markets to supply retailers

1. Retailers came to market
2. Farmers sold entire package
3. Wholesale merchants located in adjacent buildings
4. All sellers had to stay together
5. Space became limited
6. Facilities consisted of

    (a) Sheds and open space for farmers
    (b) Small stalls or stores for dealers
    (c) Narrow streets

c. As time passed these markets became more and more inadequate

1. Population to feed became too large for market to handle the food
2. Increases in per capita consumption further increased volume to be handled
3. Tall buildings were constructed around market district so no room to expand
4. Products stacked on sidewalks and in streets
5. Railroads were invented but could not get railroad tracks to stores---cartage
6. Motortrucks invented—area fed by market increased—traffic congestion on narrow streets
7. High rents, big cartage bills, high labor costs, waste of time, confusion, much deterioration and spoilage

d. Efforts to solve the problem brought changes in facilities

1. Railroad terminals were built for limited use
2. Chain store organizations built warehouses
3. Trucks by-passed old market to out-of-town buyers
4. Split markets resulted in more dissatisfaction
5. When the central market saw it no longer had monopoly it decided to improve its condition

e. Re-building central markets

1. Specialized wholesale markets for different food groups, such as fruits and vegetables, were built
2. These new facilities have

    (a) Rail spurs to buildings
    (b) Wide streets

    - (c) Parking areas
    - (d) Front and rear entrances
    - (e) Loading and unloading platforms
    - (f) Adequate storage
    - (g) Refrigeration
    - (h) Handling equipment

  3. To get these facilities the market usually was re-located

    - (a) On less expensive land
    - (b) At point accessible to railroads
    - (c) Where streets and highways were adequate

  4. Wholesaling and jobbing functions were combined
  5. These changes stopped the downward trend in volume handled

f. Current trend toward less specialized, more complete wholesale establishments

  1. Retail stores are larger, smaller in number, and handle more items
  2. Wholesaler selling only onions and potatoes has little function
  3. Complete line wholesalers are developing--handling not only all kinds of fruits and vegetables but also other products in fresh, canned and frozen form
  4. These larger wholesalers need

    - (a) Equipment for prepackaging and other processing operations
    - (b) More space
    - (c) One-story buildings to make best use of handling equipment which their volume justifies

  5. If new market district is properly located such wholesalers usually move into it or adjacent to it
  6. Then we have complete wholesale food centers developing either

    - (a) Around relatively new markets such as Buffalo and Cleveland, or
    - (b) In new locations such as markets proposed in Boston, Philadelphia, Birmingham, Chattanooga, and Lynchburg

  7. When conditions are not suitable for concentrating, these service wholesalers can scatter because they do not depend on buyers coming to their warehouses

  8. Since these large wholesalers take orders and deliver many buyers have quit coming to market

  9. City wholesale farmers' markets are dying out, because

    - (a) Buyers not there

  - (b) Farmers moved too far away
  - (c) Farmers too busy to sell this way

g. Each time these city food markets have changed many people have said that city market facilities are no longer needed. Still

  1. Wholesale food marketing facilities continue to expand
  2. The volume of food handled in wholesale facilities of all kinds continues to increase
  3. Just as light did not disappear from the earth when the oil lamp passed out, wholesale market facilities become outmoded but the need for proper facilities remains
  4. Our problem as marketing people is to develop facilities for the future not to meet conditions of the past

V. Some changes in food retailing facilities

a. Early inhabitants used farmers' markets and house-to-house peddlers
b. Then small retail stores were built everywhere, many specializing by commodities
c. These changed into "cash-carry" stores
d. Chain stores developed; then to compete
e. Independents formed voluntary chains
f. Now we have supermarkets with 82.5 percent of food retailing (excluding restaurants) being done by 89,000 stores

  1. These supermarkets handle thousands of items
  2. Cost hundreds of thousands of dollars to build
  3. Many have annual sales of more than 1 million dollars
  4. Instead of locating downtown they locate

    - (a) At places easy to reach
    - (b) Where plenty of parking space is available

g. Most of these retail stores have some kind of tie-up with wholesaler

VI. More processing done in marketing channel

a. At one time most processing was done by farmer or housewife
b. Then much processing was done at central market
c. More recently processing has moved closer to producing areas

  1. Breakdown of central livestock markets
  2. Poultry-processing moved to the country
  3. Cotton mills moved to the south

d. More and more processing is being done by marketing agencies

  1. Cuts maid service in home

    2. Raises cost of marketing

  e. These changes have

    1. Brought drastic changes in marketing facilities
    2. Made processing big business
    3. Made it necessary to build facilities in new locations
    4. Increased economies of scale

VII. Changes in warehousing (refrigerated for example)

  a. When had no refrigerated warehouses, products had to be used as they were produced or put into less perishable form
  b. Then public cold storage warehouses were built

    1. Multi-story structures
    2. Cooler and freezer space, but mostly cooler
    3. Designed with little thought to operating economy
    4. Prejudice against products stored in them
    5. Cold storage laws

  c. Since beginning of World War II nearly all new refrigerated warehouses that have been built are one-story structures capable of maintaining any temperature in any room--much mechanization
  d. With growth of large marketing agencies more private cold storage facilities have been built by

    1. Meat packers
    2. Frozen food handlers
    3. Wholesalers

VIII. Changes in transportation facilities

  a. When depended on horse and wagon most foods were produced nearby
  b. Railroads opened the West

    1. Ice refrigerator car made real contribution, but was not entirely satisfactory for frozen foods
    2. Improved refrigerator cars

      (a) Split absorption
      (b) Mechanical
      (c) Dry ice

  c. The advent of motortruck changed things again

    1. Cut farm-to-market time
    2. Cut transportation costs
    3. Often cut spoilage
    4. Eliminated horse and wagon
    5. Cut out much rail transportation
    6. Eliminated the need for so many assembly points in producing areas

        (a) Cotton gins
        (b) Milk plants
        (c) Fruit and vegetable assembly points
        (d) Grain elevators

    7. Broadened areas served by distribution centers
    8. Then caused railroads to change

d. Transportation facilities continue to improve
e. Now we are seeing more coordination between

    1. Rail and trucks
    2. Truck and water
    3. Rail and water

f. More private transportation

IX. Changes in marketing structures in producing areas

a. Numbers of facilities are being reduced and volume handled is expanding

    1. Cotton gins
    2. Milk plants
    3. Packing sheds, etc.

b. Many country facilities are being by-passed to go to "Sub-terminal," a point of greater concentration

    1. Country elevators
    2. Livestock shipping pens
    3. Lettuce packing facilities

c. Marketing facilities in producing areas are doing more processing to

    1. Cut transportation costs
    2. Reduce spoilage and deterioration
    3. Cut labor costs

X. What changes in marketing structures may be expected in the future?

a. These trends have been pointed out because they are the best guide for estimating what the future may bring forth
b. Average size of retail stores will increase further

    1. Not by large stores becoming larger, but
    2. By more small stores passing out of existence and medium size stores becoming larger

c. Number of wholesale establishments will decrease, and average volume of business of wholesaler will increase

1. Will handle more lines to the point of supplying all the needs of retailers
2. Will render more service

   (a) Delivery
   (b) Prepackaging
   (c) Other processing
   (d) Other services to retailer, such as

      (1) Merchandising helps
      (2) Financing
      (3) Accounting
      (4) Engineering
      (5) Supervisory

d. Greater integration between wholesalers and retailers

1. Not necessarily larger chains
2. Closer ties may or may not be common corporate ownership

e. Distribution area served will increase in some cases and not in others
f. Will see greater coordination among various forms of transportation
g. Greater use of completely controlled temperature transportation equipment
h. Further relative decline of central markets for livestock and products thereof.
i. Further increases in amount of processing in producing areas
j. Perhaps some further decline in the number of agencies through which products move from farmer to consumer, such as

1. Merging of jobbing and wholesaling
2. More cotton compressing at gins
3. More movement directly from farm to processing plants

k. Fewer and larger marketing agencies in producing areas, drawing from larger areas
l. Nearly all food handling operations will be conducted in one-story buildings--perhaps even flat storage for grain if can find economical way to handle

m. More mechanization at every step in the marketing process to increase labor productivity
n. More attention to designing facilities and handling equipment to fit each other
o. More attention given to locating facilities

1. On railroads, where used
2. Where highway transportation is good
3. On less expensive land

p. Some of the forces that will bring these changes are

1. Economies of scale that operate in nearly every part of marketing system
2. Motor transportation makes larger operations possible
3. High wage rates make further mechanization desirable, and larger volume per plant makes it possible
4. Greater integration between successive steps in marketing reduces risks
5. Pressures to hold down marketing costs

XI. There will also be unpredictable changes

a. New scientific discoveries and inventions may upset significant parts of the marketing system and thus change the kind of facilities needed
b. Some examples of what might happen under such conditions.

1. Through radiation may be able to stop deterioration and spoilage and not need refrigeration
2. Use of atomic energy may bring significant changes in transportation
3. Production of food chemically could really shake up the marketing system

c. These unpredictable things are mentioned simply to emphasize further how dynamic our marketing structure and facilities are

XII. What does all this mean to persons engaged in marketing research, service, and educational work?

a. To improve marketing structures Federal and State marketing workers need to

1. Be practical
2. Understand problems
3. Know what good facilities are
4. Have a good idea what the facilities of tomorrow may be like

b. It takes a combination of engineering, economics, business, imagination, and public relations to do the job
c. The field changes so rapidly that we must run fast to stand still
d. Since the entire marketing process takes place in a series of facilities, improvements in the design and methods of operating these facilities are basic to marketing efficiency and many other types of improvements in marketing.

Presentation at Dinner Session
June 17, 1955

MARKETING IN A CHANGING ECONOMY

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Tonight let's start off by turning back the clock 21 years to 1934. And in that year, suppose those having positions similar to your own had assembled on the University of Kentucky campus for a National Marketing Workshop to discuss "Marketing Efficiency in a Changing Economy."

Can't you hear them talking now about the Ever-Normal Granary, marketing quotas, acreage allotments, crop loans, and the many other programs created to cope with farm problems at that time? While they pin-pointed some very serious problems, were they successful in recognizing the opportunities ahead of farm people between 1934 and 1955? Would their discussions, for example, have included the broiler industry--an industry which has grown more rapidly than any other major phase of American Agriculture?

Of course, for many of us, our hindsight is a lot better than our foresight. But let's take a closer look at the development of the broiler industry, because some principles are involved--principles which are also being used by some other commodity groups--which could point the way to even greater future progress. So, to better understand the future, let's quickly review the past.

You are already familiar with the dramatic growth of the broiler industry. Just think--in 1934 only 34 million commercial broilers were produced in the United States. In 1954, only 20 years later, the number had soared to more than a billion.

As you look back over the past 20 years or so to the days the broiler industry was in its infancy, you will recall that chicken fryers were a luxury--a special treat to be enjoyed for Sunday dinner or when company came in for a visit. And even then chances are they were available only for a few weeks during the spring and summer.

That was before: Research by the geneticists had brought about better meat type breeds. That was before: Research by the nutrition authorities had discovered high energy rations, antibiotics, and other developments which today enable the chicken to convert feed into meat more efficiently than any other farm animal. That was before: Research by the pathologist had enabled our industry to conquer or control many hazardous diseases. That was before: The appearance of a host of other research developments which became the very foundation upon which the broiler industry is built today.

So, on behalf of the thousands who make up this great industry, I would like to take this opportunity to pay tribute to the dedicated research workers in the U. S. Department of Agriculture and the Land Grant Colleges who have had such a vital part in the birth and growth of commercial broiler production.

To a major degree the feed companies and hatcheries, rather than the extension service, have brought research findings from the scientist to the broiler grower. Why? They were applied on family farms to commercial flocks ranging in size from 2,000 to 40,000 or more birds, thus providing economy of production through more efficient use of farm labor. As the industry grew these flocks became concentrated in 13 principle commercial production areas, thereby reducing the cost of distributing chicks, feed and supplies and of assembling the birds for market.

From the marketing standpoint it is essential to study and understand production patterns and trends, because, as was true in the broiler industry, these trends, can set the stage for revolutionary changes in marketing.

While some farm commodities flow through very much the same marketing system used 50 years ago, the development of the commercial broiler industry has resulted in the creation of new marketing methods and channels. Let's briefly consider some of them.

Instead of shipping live broilers long distances to terminal markets, as was true only a few years ago, modern processing plants have been established in the production areas. It is remarkable the way the efficiency of these plants has been increasing. As recently as 1946, an output of 50 birds per man hour in the New York dress phase of the processing operation was considered good. Today, with modern machinery the output has climbed to 200 birds per man hour. At the end of World War II broilers from many areas were "New York Dressed" at the time they were delivered to retailers. Now they are in the "Ready to Cook" form at the time they leave the plant.

As production areas grew in size, it became necessary for them to reach out greater distances to find market outlets. For example, last year, Georgia, the nation's largest area, shipped 1,376,000 pounds of processed broilers to Los Angeles; 6,146,658 pounds to New York; 2,120,000 pounds to Cincinnati; 8,605,000 pounds to Cleveland; 23,651,000 pounds to Detroit; and 29,882,000 pounds to Chicago. Consequently, that area has coast-to-coast distribution on a fresh-dressed, ice-packed product. And being a highly perishable product with a rather short shelf-life, it moves directly from the production area to its destination, rather than being channelled through one or more primary markets as is true with a large volume of the eggs, cattle, grain, and some other commodities. Thus as the industry grew, it became necessary to establish pipelines of trade where none existed before--a development made possible by modern transportation and refrigeration.

Now, how have the developments in both production and marketing affected those of you who are performing various official services for our industry?

Today we have daily broiler market news reports from the principle production centers. In importance, these reports now overshadow those from terminal markets. There are weekly reports of chick placements which provide an accurate estimate of marketable supplies 10-13 weeks in advance. These are but two examples of the many ways you have recognized the impact on your work of the revolutionary changes in the broiler industry. Without such valuable services, think of the chaos which would result. While it may seem unfortunate that members of our industry seem to take these services as a matter of course, you can be certain that their true appreciation of them would quickly make its appearance should the question of their continuation be at stake.

Through teamwork between industry (the breeders, hatcheries, feed companies, growers, and processors) and those from U. S. D. A., Land Grant Colleges, and State Departments of Agriculture engaged in research and service activities, the over-all effect has been to make available to the consumer a product of better quality at a lower cost. And in working toward this objective over the years, realizing at the outset our industry was producing one of the nation's most appealing and appetizing foods, we enjoyed profitable markets, except for very brief periods. So great was the potential demand that production could be and was increased 20-30 percent a year, year after year, and growers continued to receive profitable prices.

Thus from its infancy to the early fifties, the broiler industry was passing through an era when one of its greatest challenges was not to create markets, but rather to produce, process, and distribute enough fryers to meet the potential demand.

However, three years ago the industry's rate of growth began to slow down rather rapidly, and last year with 11 percent more broilers than in 1953, the value of the total crop was about 40 million less than the year before. Did the handwriting appear on the wall three years ago when the rate of growth was curbed? Has the broiler industry reached a plateau in its volume of production, or has it reached a peak and started sliding down the other side? How much would it have been necessary for the broiler industry to cut back last year to have enjoyed a reasonable profit?

As we consider these questions, let's take a better look at the broiler industry as we know it today.

The nation across, the broiler industry operates a gigantic production line. Steps along this production line represent services rendered by the breeder, the hatcherymen, the feed manufacturers, and dealers, the growers, and the marketing firms. To perform these services requires a minimum capital investment of a billion dollars in buildings and equipment. Additional hundreds of millions are needed for operating expenses. Like the steps along the assembly line of an auto manufacturer, every step along the broiler industry's production line is so dependent upon the others that the stability and welfare of any one is inseparable from the stability and welfare of all over the long pull. To succeed in the broiler industry, therefore, demands teamwork from all of its parts. Perhaps that is an important factor behind the current trend toward a vertical integration of the broiler operation. Under these circumstances you can understand why the marketing man is anxious to see production problems overcome, and why the producer is just as anxious to see progress in marketing.

In your work, whether you are engaged in research, extension, or state department of agriculture programs, your area of activity is reasonably well defined. By working together in harmony, your combined efforts are vastly more effective. Just as is true with the different parts of the broiler industry, teamwork brings greater success.

In addition to teamwork between different segments of the broiler industry, it is also essential to have teamwork between production areas. Unlike certain fruits or vegetables that vary from one part of the country to another because of different soil and climatic conditions, a good quality broiler is the same whether grown in Kentucky, Georgia, Maryland, or California. Why shouldn't it be? You start off with the same meat breeds. Your feed has about the same formulas, and substantially the same grower management and processing methods are in use in all the various areas. Consequently, a political boundary line neither adds to nor subtracts from the quality or flavor of broilers. It's surprising, though, the number of those in marketing work with state institutions who are slow to recognize this basic truth. But you don't kid the American consumers very long and get by with it. And proof of their attitude regarding the uniformity of the quality of broilers comes from the average prices received last year by growers in the various areas. In Georgia it was 22.0 cents a pound, Maryland 22.6, Maine 22.5, Texas 23.3, and the U. S. average was 23.1. As a result of both competition and the uniformity of quality, there is a close relationship in the prices received on one area to those prevailing in the others. For this reason, it becomes necessary to consider progressive broiler marketing plans for the entire industry, rather than for just one county, one state, or one region.

In the future, as has been true in the past, the success of those in the broiler industry will depend upon their ability to meet competition at four different levels.

1. Their income must be equal to or greater than that they would receive for alternative sources for the same labor.

2. They must be able to equal or exceed the efficiency of others in their area engaged in the same segment of the broiler industry.

3. They must equal or exceed the efficiency of those rendering similar services in other areas.

4. The price and quality of broilers they have a part in producing and marketing must be such as to enable them to compete successfully with other meats at the consumer level.

These four points are not as academic as they may sound. They provide the basic foundation upon which the broiler industry will grow or fall.

As you go from one section of the country to another, you hear some marketing men refer to their state as being confronted with a deficit in broiler production. They figure out the approximate number of broilers consumed in their state by multiplying the average annual per capita consumption nationally by the number of people, and subtracting the pounds grown in their state. The difference or deficit, they say, represents a real opportunity for local farmers to cash in on. Would it really be that simple if they teamed up with their co-workers and really analyzed a production and marketing program, and came up with answers to each of the four points just mentioned?

The real yardstick, therefore, becomes not a political boundary line, but the ability of farmers in their own state to produce and market broilers just as efficiently as it is now done in some other location.

Yes--efficiency is the magic word. And "Marketing Efficiency in a Changing Economy" is the theme to which this workshop is dedicated. For the broiler industry it is especially timely. We have reached the end of an era in which our greatest challenge was to produce enough birds to meet the market demand. But, we are now entering a new era in which we face an even greater challenge of preparing the market for the bird. How?

Before attempting to answer that question, and realizing the rapid growth enjoyed by the broiler industry, let's take a look at just what our market is today.

The average person eats a serving of chicken fryers only about once every two weeks.

Only six cents out of the total meal dollar is spent for broilers.

And broilers represent only 7 percent of the total meat volume.

From a marketing standpoint let's also recognize another fact. Several years ago the producer sold his chickens in local markets or directly to consumers. He was in a position to know first-hand, therefore, what the consumer thought of his product. But with the concentrated commercial production program under way today, the farmer is hundreds or even thousands of miles away from consumers he serves.

To bridge this gap successfully, as has been done by other groups, the leaders of the broiler industry visualize an aggressive, hard-hitting, four-point promotional program of (1) Market research, (2) Paid advertising, (3) Merchandising, and (4) Consumer Information. You will notice we listed market research first. On the production side research has served as the foundation for better breeding, feeding, and management. In building markets it is also logical that research should point the way to sound approaches to programs for advertising, merchandising, and consumer education.

What is the marketing research job ahead?

(1) To find out why consumers buy broilers and what should be done to get them to buy more.

(2) To find new and more profitable uses for poultry by-products.

(3) To find out what distribution bottlenecks are causing such a wide variation in the sale of broilers at the retail level.

(4) To develop new products from chicken meat.

If it were possible to have the answers to some of the difficulties we experience, we would be a long way along the road toward turning today's stumbling blocks into stepping stones to a brighter future. This objective can and will be reached successfully as you and industry work together as a team.

Is it Your Challenge

You are the fellow that has to decide
Whether you'll take it or toss it aside,
You are the fellow who makes up your mind
Whether you'll lead or linger behind;
Whether you'll strive for the goal that's afar,
Or just be content to stay where you are,
Take it or leave it, here's something to do,
Just think it over, it's all up to you.

Presentations at General Session
Saturday Morning, June 18

RESEARCH IN MARKETING EFFICIENCY

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Classification of Research in Marketing Efficiency

Research in marketing efficiency may be subdivided in any of several ways. The following taxonomy stems from the two major tasks of a market or marketing system - that is, (1) the performance of the various operations, such as assembly, processing, transporting, storing and distributing, which are involved in the usual transfer of goods from primary producer to consumer, and (2) functioning as a price-making mechanism in the allocation of factors among producers and products among consumers thus reflecting, via prices, the relative desires of consumers back to producers as a guide to resource use in continuing production. From these two tasks, the major dichotomy of the broad category of marketing efficiency is made into operational efficiency and allocative efficiency, commonly known as marketing efficiency and pricing efficiency respectively. Studies of marketing, or operational efficiency typically accept as given the price structure and price-making operations and appraise the added value of the product in the marketing process in view of the resource inputs necessary to create that added value. Studies of pricing efficiency on the other hand, characteristically accept as given the market structure with respect to costs and value added, and examine for net price consistency with respect to form, time, and space.

To further subdivide marketing efficiency broadly considered beyond the division into operational efficiency and allocative efficiency aspects, we must consider the firm and industry, or as it is currently termed, the micro and macro aspects. As is readily evident, several levels of aggregation ranging all the way from the efficiency of one stage of a particular processing plant's operation through studies of plant efficiency, multiple plant operations, and area operations to appraisals of efficiency for an entire marketing system handling multiple products are conceptually possible. In practice, we as marketing economists have devoted our analytical efforts mainly on the micro end. Macro studies in efficiency have been somewhat descriptive in character, partly due to difficulty of collecting comparable and useful data for aggregates, but also due to the recognition of efficiency as a "relative term" and the problem of a base for comparison at the aggregate level as well as doubts generated by the conflict between efficiency and welfare ends which render evaluation of efficiency of marketing aggregates even more difficult.[1] If sharp modifications of a marketing system are required to increase efficiency, society may, despite the proffered advantages, prefer no change. At the level of the individual marketing firm, analysis and adoption of the findings of efficiency studies is usually not so hampered, since increases in operational efficiency can usually be counted on to mean enhanced profits to the firm.

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[1] For a detailed discussion of the implications of welfare and efficiency criteria as applied to marketing services, see R. G. Bressler's "Efficiency in the Production of Marketing Services", Paper No. 6 (dittoed) Economic Efficiency Series, University of Chicago, 1950, pp. 1 - 5.

The process of classification of efficiency studies in marketing would not be complete without including two other elements of subdivision, technological versus economic studies as both relate to the notion of efficiency, and static versus dynamic studies. It should be recognized that here again, as with other elements of this classification, there are to be found conceptual examples shading from one extreme to the other for each of these attributes. I would make no pretense that this classification is complete, nor would I infer that examples of adequate research can be produced for each of its cells. In the time allotted we can no more than glance at the contents of a few of the cells. Hence I make no pretext at completeness, but I will try to indicate what appears to be some interesting samples of recent research in the area of marketing efficiency. In doing so, I hope also to touch briefly on the methods of analysis employed and areas in which further work is needed.

Research in Pricing Efficiency

We can begin with the area of pricing efficiency, which will receive less attention than operational efficiency at this workshop, judging from the individual work group topics. The dependence of producers, processors and consumers upon the effectiveness of the pricing system for their earned shares in the rewards of productive effort calls for careful consideration of this aspect of efficiency. Operational efficiency of a marketing system alone is not enough. The trend toward government participation in pricing in agriculture and the growing concentration of economic power in industrial segments of the economy certainly do not diminish the need for careful appraisal of pricing efficiency. The recent study by Hassler at the California station of pricing efficiency in the manufactured dairy products industry is a good example of research in pricing efficiency at the industry level.1/ Hassler evaluates the temporal, spatial and form consistency of the pricing mechanism for butter, cheese, evaporated milk and nonfat dry milk against the norms of a perfect market. After weighing the evidence, Hassler concludes that price relationships for most of the products of the dairy manufacturing industry were remarkably consistent with the perfectly competitive system. Only in the national brand evaporated milk was there a general departure of observed results from the competitive norm. The essentially static character of this study, as Hassler recognizes, does not provide answers to the more significant questions of change and rates of change in a dynamic setting, and their

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1/ James Hassler, "Pricing Efficiency in the Manufactured Dairy Products Industry", Hilgardia, Vol. 22, No. 8, August 1953, pp. 235 - 334.

implications in efficiency terms. A further problem in such studies of pricing efficiency is the use of the perfectly competitive norm as a standard against which observed pricing performance is weighed, despite the recognition that such a model is not necessarily completely consistent with maximum economic efficiency and some of its basic assumptions depart from reality in a dynamic situation.1/ In spite of the inadequacy of current theory in supplying relevant models for precise evaluation of pricing efficiency, the qualitative answers to be derived from this type of analysis in the case of other commodities will be useful, and continuing effort is needed in the evolution of applicable theory and analytical tools to cope with the dynamic aspects of pricing efficiency.

The identification of quality as the consumer views it and its reflection in the pricing system is another aspect of pricing efficiency which will be considered by some of the work groups.2/ Research in this area is quite extensive and ranges from studies of consumer preference and the devising of grade standards which are meaningful for producers, processors and consumers, to the empirical testing of the efficiency of the pricing system in identifying quality characteristics and reflecting differences therein along the market channel. The extensive research work of the grading and regulatory services in the development and modification of grade standards for farm products involving the collaboration of the physical and biological scientists with marketing specialists is well known to all of us.

One example of recent research in pricing efficiency relative to quality is an outgrowth of the development of carcass grades for several kinds of livestock and concerns itself with the problems of buyer estimation of carcass grades and yield from the physical appearance and weight of the live animal as a basis for pricing. The studies were made by the North Central Regional Livestock Marketing Research Committee. The findings point to the comparative accuracy of carcass grade and yield estimation in the aggregate, in which tendencies to underestimate the grade of high quality livestock and overestimate the grade of the lower qualities are counterbalanced. Despite the aggregate accuracy such errors of estimation reflect substantial pricing hazards for the individual seller whose offerings do not cover a quality range.3/

1/ Tibor Scitovsky, Welfare and Competition, Richard D. Irwin, Inc., 1951, pp. 233 - 244.

2/ Prior effort in this direction is to be seen in the report of the Third National Marketing Workshop, "Market Demand and Product Quality." July 1951.

3/ See: North Central Regional Livestock Marketing Research Committee, "Pricing Accuracy of Slaughter Cattle, Veal Calves, and Lambs", North Central Regional Publication No. 53, Purdue Agricultural Experiment Station, October 1954; C. D. Phillips, "Accuracy of Present Marketing Methods in Pricing Veal Calves, Bulletin 610, Kentucky Agricultural Experiment Station, March 1954; C. D. Phillips and James L. Pearson, "Accuracy of the Present Method of Pricing Slaughter Cows, Bulletin 611, Kentucky Agricultural Experiment Station, March 1954;

(continued)

Footnote 3, continued

C. D. Phillips and James L. Pearson, "Accuracy of the Present Marketing System in Pricing Kentucky Spring Lambs, Bulletin 612, Kentucky Agricultural Experiment Station, March 1954

Another problem in the area of pricing efficiency which has received attention in Kentucky is the question of the effects of light variability on warehouse floors upon the accuracy of grading and pricing of burley tobacco. This study involved the securing of light readings on individual baskets of tobacco at the time of grading and at the time of sale and the identification of buyer, buyer grade, and price as well as several other items. Punch card techniques were used to handle the information thus obtained on the Lexington market from some 40,000 baskets of tobacco. Some of the results have been published but the study is still under way in an effort to determine optimum light intensity for maximum pricing accuracy. The rapid sale rate of tobacco, at times up to 500 baskets per hour, is an obvious complicating factor.1/

Research in Marketing Efficiency: Micro Statics

Turning now to consider operational efficiency in marketing as an area of research, we find that much of the research effort in recent years has been directed toward the micro aspects of operational efficiency. Any attempt at a complete inventory of categories of such efforts would require more time than is available. All of you are familiar with the substantial contributions of research in motion and time study on a plant or process basis in the interests of economy in the use of labor and capital inputs in the production of marketing services. These studies represent for the most part the application of methods engineering techniques evolved in industry to problems of marketing firms or elements thereof. In extent such studies range all the way from process analysis down through component operations, work elements, and finally to therbligs, the fundamental building blocks of accomplishment. The progress of research methods in the micro area of operational efficiency began from the fairly separate techniques of (1) appraisal of physical motions and efforts with the objective of improving physical or technical efficiency without reference to costs, and (2) the accounting cost approach which does not lend itself well to separation into stages from which meaningful economic input-output relationships can be derived - that is, the answers derived on a pure accounting basis remain in aggregates too large for use in operational improvement. Currently we find micro studies of operational efficiency which recognize the need for combining the tools available from the disciplines of engineering and economics to provide meaningful economic answers in a degree of detail which recognizes the separability of operations in the marketing process. Such studies draw upon economics for the generally accepted

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1/ Ernest D. Gooch, Jr. and Carl M. Clark, "Basket Price Variation for Burley Tobacco", Bulletin No. 591, Kentucky Agricultural Experiment Station, 1952.

theory of the firm, modified by the recognition of the separability of operations in the marketing process and restricted to linearity in output expansion via increasing the number of identical production units used or increasing hours of operation to expand output per time period.1/ The sacrifice in realism with respect to actual plant ownership and operation is viewed as fully compensated by the precision achieved in the answers with respect to operational efficiency for models which are capable of practical replication.

The discipline of engineering is drawn upon in such studies to provide descriptive information on plant layout and process flow charts, as well as the already cited elements of time and motion studies. Cost estimates for certain variable costs as well as costs assigned to fixed plant items are synthesized or estimated via engineer reference data, and the results of work measurement studies. The initial product of this type of study is a series of cost functions, one for each component operation which relate rate of output to annual fixed costs and variable costs per hour. Such cost functions, when prepared for alternate methods, yield answers in comparative efficiency which permit the "building" of synthetic optimum plants for the performance of marketing processes, providing restrictions arising from interrelations among the component operations and elements of input indivisibility are duly observed. While the first systematic use of this type of analysis is to be found in Bressler's work on country milk plants in New England in the early 1940's, several studies employing these techniques are published or under way currently in several states. Notable among the present offerings are the series on efficiency in fruit marketing by Bressler, Sammet, B. C. French and others at the California station, the dairy processing and handling studies at Idaho, Iowa, Montana and Washington stations, and a recently released study in peanut marketing by Penny and Moder at the Georgia station.2/ Perhaps the most extensive analysis of this

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1/ Within these restrictions, the potential use of linear programming techniques is evident. Some marketing studies imploying this technique are already under way.

2/ The series on Efficiency in Fruit Marketing published by the California Agricultural Experiment Station currently has nine bulletins. The other studies referred to are the following: S. H. Walker, H. J. Preston and G. T. Nelson, "An Economic Analysis of Butter-Nonfat Dry Milk Plants", Bulletin No. 20, Idaho Agricultural Experiment Station, 1953; J. R. Frazier, V. H. Nelson and J. D. Nord, "The Cost of Manufacturing Butter: A Study Based on Data from 13 Iowa Creameries", Research Bulletin 389, Iowa Agricultural Experiment Station, 1952; E. H. Ward and H. L. Cook, "Concentrated Milk: Some Aspects of Costs and Acceptance for Retail Distribution", (mimeographed release) Montana State College, undated; E. L. Baum and D. E. Pauls, "A Comparative Analysis of Costs of Farm Collection of Milk by Can and Tank in Western Washington, 1952", Technical Bulletin No. 10, Washington Agricultural Experiment Station, 1953; J. J. Moder, Jr. and N. M. Penny, "Industrial Engineering and Economic Studies of Peanut Marketing", Bulletin No. 286, Georgia Agricultural Experiment Station, 1954.

sort is the study of comparative economy of cottonseed oil mills made by Brewster of the Agricultural Marketing Service.[1] This study, in addition to considering some 60 odd different "models" of cottonseed oil mills in arriving at comparative efficiencies, takes account of the existing competitive context in which the cottonseed oil mills typically operate as a basis for explaining the relatively small size of cottonseed oil mills observed in comparison with the implied optimum size under "perfect competition". The problem of desirability and means of changing the competitive context to utilize evidently available knowledge of the economies of scale in cottonseed oil mills is illustrative of the difficulties faced in applying at the macro level the results of micro level studies. Like several other current studies of operational efficiency, Brewster's study represents the joint cooperative efforts of engineers and economists working together toward the solution of problems of marketing efficiency.

While micro level studies of operational efficiency such as these just mentioned have yielded much meaningful information, there remain several difficulties which such studies have not solved. The arbitrary character of assignments of overhead or joint costs, long recognized by economists, still remains a problem in these studies and is complicated in many instances by choices in allocation of fixed costs which are based upon assumptions as to length of operating period or season.[2] The general assumption with current techniques of micro efficiency analysis of managerial homogeneity in marketing firms is a continuing problem. We, as marketing economists, might well recognize this as an obviously unrealistic assumption, which may provide no difficulties in dealing with generalizations relative to marketing firms, but accounts for a major element of variance in efficiency among such firms.

In discussing pricing efficiency, reference was made to the problem of identifying quality in terms of the consumer's views and reflecting consumer preference via the pricing system back to the producers. A related question in the area of operational efficiency is the problem of quality maintenance between producer and consumer. A substantial amount of work built around the technological developments in refrigeration and prepackaging has been directed toward solving the problem of quality maintenance in the market channels.[3] Transport improvements also have played a contributing role in maintaining product quality.[1] I will forego any further comment upon quality maintenance since this is the subject of a general session of the Workshop next Thursday.

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[1] John M. Brewster, "Comparative Efficiencies of Different Types of Cottonseed Oil Mills and Their Effects on Oil Supplies, Prices and Returns to Growers", Marketing Research Report No. 54, USDA, AMS, 1954.

[2] Guy Black, "Synthetic Method of Cost Analysis in Agricultural Marketing Firms", Journal of Farm Economics, Vol. XXXVII, No. 2, 1955, pp. 276 - 277.

[3] Some recent examples of studies in this area are: William A. Aronow and James E. Bryan, "Prepackaging Tomatoes", Marketing Research Report No. 20, USDA, October 1952; Lawrence J. Voegeli, Edgar F. White, Brice Masters and P. L. Breakiron, "Packing and Shipping Lettuce in Fiberboard Cartons and Wooden Crates - A Comparison", Marketing Research Report No. 86, USDA, AMS, April 1955; B. M. Masters, J. C. Winter and B. P. Rosanoff, "Potential Savings by Shipping Cauliflower in Double Layer Packs", Marketing Research Report No. 78, USDA, AMS, March 1955.

Research in Marketing Efficiency: Micro Dynamics

Recognizing the essentially static character of most micro level studies in marketing efficiency leads directly to a consideration of the area of micro dynamics as it applies to marketing efficiency. Aside from work considering plant flexibility as a means of coping with uncertainty, the only studies that I am aware of which take full cognizance of the dynamic character of markets and the production of marketing services are two studies in storage and inventory management. One is an unpublished study by Smidt at the University of Chicago dealing with the management of carryover stocks of grain and explicitly introducing uncertain knowledge of the future by use of probabilities. The other is the study made by Tolley and Harrell, of Chicago and North Carolina respectively, of the management of meat inventories.[2] This involves the construction of a firm model with the objective of maximization of expected profits from seasonal storage of meat, subject to a risk restraint. While this study does not carry through to the point of empirical testing of the model for actual firms, the contribution made in this study to consideration of the problem of decision making by marketing firms under dynamic conditions is important. It is to be hoped that future research will extend this approach into other aspects of agricultural marketing.

Research in Marketing Efficiency: Macro Aspects

While the contributions of micro analysis in market efficiency have been significant in recent years, some agricultural economists hold that the most significant advances in market efficiency have come about through modifications in marketing systems rather than individual marketing firms. J. D. Black, in adopting this view, holds that research effort in marketing should study marketing systems to single out the particular operations which have contributed most to efficiency gains in progressive marketing systems and discover the ways such operations can be used in less advanced systems.[3] Cochrane, on the other hand, deplores the aimless hunt for inefficiencies in the marketing system and advocates the micro approach using the theory of the firm adapted to the peculiarities of the marketing process in the search for improved efficiency.[1] Regardless of the view one takes as to approach, the fact remains that research in marketing efficiency at the industry level is relatively limited in extent as compared to micro level studies.

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[1] See "Technology in Food Marketing", Agriculture Monograph 14, USDA, October 1952.

[2] George Tolley and Cleon Harrell, "Management of Meat Inventories", Journal of Farm Economics, Vol. XXXVII, No. 2, May 1955, pp. 252 - 269.

[3] J. D. Black, "Lines of Advance in Research in Marketing, Journal of Farm Economics, Vol. XXXVI, No. 5, December 1954, pp. 1063 - 1064.

In part at least, this stems from some inadequacies in available theory of resource allocation and efficiency at the macro level, and the hazards of aggregating firm relationships to the industry or economy level.[2] It also arises from the difficulties pointed to earlier of arriving at any unique notion of macro efficiency completely devoid of ambiguity.

Genuinely macro economic studies in marketing efficiency which go beyond the purely descriptive phases are, as a consequence, somewhat difficult to find. The necessary role of description as a phase of research is not to be ignored, but description alone is not likely to contribute to enhanced market efficiency.

A recent Harvard study by Branson and Holton of the distribution of food in Puerto Rico is said to have resulted in a proposal for evolving a new marketing structure which, if adopted, would reduce the spread between producer and consumer by an estimated one third.[3] I have not yet seen this study, but it reportedly employs the engineering-economic methods of analysis in examining the possible gains from consolidation of food stores.[4]

Earlier studies in an analytical vein which have a macro context and treat of marketing efficiency usually have dealt with the efficiency of resource use and pricing policy as related to size of firms and so to the extent of market control which such marketing firms possess.[5] The Temporary National Economic Committee study by Hoffman of large scale organization in the food industries and Nicholls' study of imperfect competition in the agricultural industries are early examples of this type of work. Research in this area must recognize as a basic premise the potential conflict between the existence of economies of scale and potential cost savings from integration in most agricultural industries on the one hand, and the possible exercise of growing monopoly power to the detriment of society as these advantages in costs are realized on the other. There is much need for further research in this aspect of market efficiency to determine ways of realizing the potential savings in costs possible through economies of scale without paying the excessive penalties arising from the exercise of monopoly power. The growing trend toward concentration in many agricultural industries, and the progress of technology toward still further gains in economies of scale make this need all the more pressing.

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[1] Willard W. Cochrane, "Agricultural Economics in the Decade Ahead", Journal of Farm Economics, Vol. XXXVI, No. 5, December 1954, pp. 824 - 825.

[2] See R. L. Clodius, "Needed Developments in Economic Theory for Use in Marketing", Journal of Farm Economics, Vol. XXXVI, No. 5, December 1954, pp. 1054 - 1055.

[3] J. D. Black, "Lines of Advance in Research in Marketing", Journal of Farm Economics, Vol. XXXVI, No. 5, December 1954, p. 1067.

[4] Guy Black, "Synthetic Method of Cost Analysis in Agricultural Marketing Firms", Journal of Farm Economics, Vol. XXXVII, No. 2, May 1955, p. 274.

[5] William H. Nicholls made a fervent plea for more of this type of research in marketing a few years ago. See Nicholls' "Reorientation of Agricultural Marketing and Price Research", Journal of Farm Economics, Vol. XXX, No. 1, February 1948, pp. 43 - 54.

The implications of vertical integration in the poultry meat industry for efficiency are examined in two recent studies which provide examples of particular consideration of the competitive context of producing, marketing and processing firms at a lesser level of aggregation. These studies are particularly interesting in that they deal with very similar problems in terms of product and technology of production, processing and sale but arrive at sharply dissimilar conclusions as to efficiency gains from integration. The one basic difference - in the particular component of the market channel vested with control - renders the opposing conclusions completely compatible.

The first study in point of time examines the effects of integrating the fryer producer into a marketing and processing system for fryers which is fully integrated via the cooperative on a statewide basis. The cooperative provides credit to producers for feed and in turn control over production and marketing decisions for fryers are transferred to the cooperative management. Pooled pricing techniques equalize the prices to producers for any given period. The authors of this study conclude that producers under such a vertically integrated system are able to reap the gains of improved efficiency in production, marketing and processing fryers.1/ In the second study of the poultry meat industry, Kohls and Wiley have examined the implications of the recent development of feed dealer control in the broiler industry via contracts with producers which provide for a guaranteed return to the producer in exchange for control over his broiler production and marketing decisions.2/ Dealer arrangements with processors complete the chain of effective vertical integration from production through processing. In a comparative analysis of two areas in Indiana, one integrated and the other nonintegrated but essentially similar in other respects, the findings point to lower returns per bird to producers and higher feed costs in the integrated area, indicating the exercise of monopoly power by the strategically

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1/ E. L. Baum and H. G. Walkup, "Economic Considerations in Fryer Production and Marketing in the Pacific Northwest", Journal of Farm Economics, Vol. XXXIII, No. 1, February 1951, pp. 90 - 107.

2/ R. L. Kohls and J. W. Wiley, "Aspects of Multiple Owner Integration in the Broiler Industry", Journal of Farm Economics, Vol. XXXVII, No. 1, February 1955, pp. 81 - 89.

favored dealers in the integrated area. No material differences between areas in efficiency of production and handling of broilers were noted.

The omission of several important categories of marketing efficiency research from this discussion has been deliberate in part, and recognizes the contributions made or to be made by other speakers in the general sessions. Among the omitted aspects are the many fine examples of studies of marketing facilities and the time and motion studies in marketing. Other omitted areas which have been the subject of somewhat less research effort include the meaning of changing technology and obsolescence for marketing firm efficiency, and the impact of governmental and institutional attributes of our economy upon marketing efficiency.

HOW AGRICULTURAL EXTENSION WORK IN MARKETING CAN INCREASE MARKETING EFFICIENCY

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Five years ago I participated in the Marketing Workshop held at Purdue University. At this workshop we discussed the topic, "Marketing Margins and Efficiency." I was fortunate in serving in Work Group I at the Purdue Workshop. In that Work Group we dealt with efficiency of the total marketing system.

Preparing for this talk today I re-read our Work Group report and, in fact, I spent quite a bit of time looking through the entire report. I was reminded that there are two types of efficiency, operational efficiency and pricing efficiency. In discussing with you this morning the marketing work in Agricultural Extension, I, of necessity, must speak mainly of operational efficiency.

Before I tell you of our Extension Marketing program in Michigan, I would like to give you the thinking of the National Extension Marketing Committee. At our last meeting held in Washington, D. C., less than two months ago, the following report was formulated. This report presents the thinking concerning the objectives of Extension marketing work in general and the specific objectives of educational work with handlers and consumers. This report has not been released and I am taking the liberty of reporting to you some thoughts which may be modified slightly. I will quote from the report:

Report of National Marketing Committee [1]

> "Marketing is a series of services which is concerned with moving farm products from producers to consumers, getting payment back to producers, and reflecting consumer demand through the system to producers. Marketing involves three groups--producers, handlers and consumers. An Extension marketing program should include the three groups.
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> "The objectives of Extension marketing work are to increase the net return to farmers from the sale of their products through improving their decisions on what, when, where and how

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[1] This is a tentative report which has not been approved by the Directors of Agricultural Extension. This report will be presented to them in late 1955 for their consideration.

to sell; to increase the efficiency of handling agricultural products; to increase the satisfaction consumers secure from the dollars spent for farm products; and to improve the marketing system to benefit producers, consumers, and handlers of agricultural products.

"One of the basic conditions for a free enterprise system is competition. The competitive system will determine the benefits going to producers, handlers, and consumers from any particular improvement. An Extension educational program in marketing should help the system rapidly reflect the benefit from improvements to the proper group. Over the long-run increased efficiency should benefit all groups concerned.

"The objectives of the educational program in marketing with consumers are to help consumers adapt shopping practices which make for more efficient marketing; to provide information to consumers on results of research as it affects their decisions on purchases of agricultural products; to regularly interpret localized, current information on supply, price, selection, care and use of agricultural products that will help consumers make intelligent buying decisions and wise use of commodities; to help consumers get more nutritional value and satisfaction from expenditures for food and other agricultural products; to improve consumers' ability to make choices based on their needs and resources; to provide a better understanding of the marketing system; and to reflect back to producers and handlers the problems and preferences of consumers.

"An increasing amount of information is flowing from marketing research projects in the Land-Grant Colleges and the U. S. Department of Agriculture that is useful to handlers of agricultural products. The Extension Service has an obligation to carry this information to the appropriate decision-making unit. Helping handlers make use of all known technology and proven business principles will help not only the handlers but also producers and consumers of agricultural products.

"The specific objectives of a well-rounded educational program with retailers and other handlers of agricultural products are to help handlers become more efficient; to acquaint handlers with the problems of producers and consumers; to acquaint handlers with research having a bearing on the agricultural products they sell; to teach handlers of agricultural products business principles; to provide and interpret information on supply, prices and quality of agricultural products; to provide business outlook information; to help handlers keep consumers informed of availability of products; and to acquaint handlers with the marketing system.

> "It is not necessary to work on all objectives to have a useful program with handlers of agricultural products. An extension program may include any one or more of the previously listed objectives. Also the Extension Service should coordinate its efforts with the work of organizations and agencies who are dealing with handlers of agricultural products."

Michigan Marketing Program

We have had an Extension marketing program in Michigan for several years which has been working toward the fulfillment of some of these important goals. Our aim is an over-all improvement in the efficiency of our marketing system. We feel that it is important to have an active program with each of the three principal groups involved in this complex system.

Last year the program was greatly expanded by the addition of $144,000 of State money to the Michigan Cooperative Extension Service. I would like to tell you about our program using it as a specific example of an attempt to actually do something to improve efficiency in marketing. This is not a perfect program. I am not attempting to sell it. We feel it has merit for Michigan.

With the new money we employed District Marketing Agents who work with producers. We employed Retailer Education Specialists to work with food handlers and food retailers, both independent and chain. We employed Consumer Education Agents or, as we call them, Consumer Information Agents to provide marketing information to consumers. I would like to discuss the organization of our Extension Marketing Program and then tell you how I think that we have been able to contribute to marketing efficiency.

Grower Education

We have four District Marketing Agents who work with special commodity groups in areas covering two to four counties. Each of these agents is located in a County Extension office. The commodity specializations are: (1) fruit, (2) vegetables, (3) poultry, and (4) livestock and grain. The objective of these agents is to provide information about marketing and markets to the producers in their areas in order to aid these producers in increasing their returns from farm marketings.

Retailer Education

The second phase of this expanded marketing program is the handling phase, working primarily with retailers. This is an expansion of the Retailer Education Program which we have had at Michigan State for the past six years. We have had wonderful cooperation during the past year in scheduling the meetings, in publicizing the meetings and in the counsel we have received from the trade associations of both the chain and the independent food dealers.

We think an improved marketing program needs the services of a number of different fields of knowledge. In our Retailer Education Program we have a meats specialist in the Animal Husbandry Department working with an Agricultural Economist as a team which presents meat merchandising information. We have a fruit and vegetable specialist in the Horticulture Department working with an Agricultural Economist as a team which presents produce merchandising information.

The regular meetings, conducted by these two-man teams, are held during the first three nights of the week. We hold a series of four meetings in each of the designated cities. The meetings are held in stores, wholesale houses, produce houses, or meat packing plants. The first meeting may be held in a chain store and the second meeting may be hald in an independent store. No two meetings are usually held in the same facilities. We find that the food store operators and managers like to visit in competitors' stores. We feel that by using this method we have been able to attract a few more people to the meetings.

The slogan of the Retailer Education Program in Michigan is "More Profits through Sales." We have billed it as a program which will enable food store operators and owners to increase their profits. We have found through experience that we are not able to sell operators on any theme other than "Here is How to Increase Your Profits." We feel that if we are able to increase the profits in a retail food store, we are generally doing it by increasing efficiency. By increasing the efficiency we are contributing to a better marketing system as a whole. In the better marketing system both the consumers and the producers will benefit as well as the retailer who initiated the change.

Consumer Information

The third phase of our Extension marketing work under our expanded program in Michigan is the Consumer Education or the Consumer Information phase. I shall continue to call it Consumer Information. This program is headed by a Consumer Information Specialist who had several years of very find Extension service in the good state of Kentucky. We were fortunate to have Miriam Kelley join our Extension staff at Michigan State last July, when the expansion took place. Miriam Kelley is project leader of Consumer Information.

In the Consumer Information work we have designated eight cities, geographically distributed over the state, as our Consumer Information Project cities. In each of these eight cities we have one Consumer Information Agent and in Detroit, our large city, we have two Consumer Information Agents. In addition to these trained Home Economists who work locally, we have the state office located on the campus at Michigan State. In this state office we have the Project Leader, and an agent, also a trained Home Economist, who prepare materials each week. This central office is very important to the efficiency of our Consumer Information program. It helps the local agents in getting materials and ideas.

In the past year, we have been very fortunate in finding well-qualified, hard working Home Economists who make up our staff. We have two of our Consumer Information Agents here at Lexington. Mrs. Kottke is the Consumer Information Agent in Flint and Mrs. Gibbs is one of the two Consumer Information Agents in the Detroit office. If you have an opportunity to meet them, I am sure you will be impressed by their abilities and interest in Consumer Information work.

You will remember that I stated that the objective of the work of the District Marketing Agents is to provide information which will increase the net returns from the sale of farm produce. I have said the objective of our Retailer Education Program is to increase the profits of food handlers. And, the over-all objective of our Consumer Information Program is to help agriculture in Michigan by providing information to consumers so that they can do a better job of buying. I would like to go back now and cite examples which have actually occurred in the past year which I feel contributed to increased efficiency in marketing of agricultural products in Michigan.

Aid to Farmers

Two of our District Marketing Agents have found that marketing organizations were needed to improve the efficiency of marketing the products that were important in their two districts. In the poultry district it was found that the poultry marketing facilities that were available were not adequate; that there were no sharp-freeze facilities in the poultry markets that were available. It was also known that the facilities in the City of Detroit were not adequate for out-state poultry producers. Many times poultry from out-state had been shipped into Detroit to find either a very materially depressed market or that there was actually no market at all for the poultry. And in returning the poultry to the home communities, much trouble and marketing losses were involved.

A private poultry processing plant was purchased as a cooperative by a large group of farmers. After the plant had been purchased, facilities for sharp-freezing large quantities of poultry products were installed. This was done in the summer of 1954. The processing plant was able to process over two million pounds of poultry in 1954 from the October 4 opening period. Being able to process, freeze and store poultry products in the fall months of 1954 enabled poultry producers in Central Michigan to withhold their birds from the market. It was already depressed with large quantities of birds. Storing the poultry enabled producers to minimize their losses and in some cases realize profits.

The District Marketing Agent also keeps on top of the market by contacts with individuals, by closely reading poultry market reports and by a study of the expected seasonal movement in poultry and egg prices. Knowing that the agent had this information, producers have called at the Extension office in person and over the phone to talk with the Marketing Agent. The District Marketing Agent in poultry has been able to help producers market both large and small quantities of different types of poultry to an advantage to the producer. In other cases processors who needed a particular type of fowl called on the District Marketing Agent and were able to locate this supply which they needed to fill orders or to keep their lines busy.

In the vegetable district, Clyde Cunningham learned that it cost some vegetable growers over a thousand dollars a season to load up, transport and sell vegetables on the wholesale markets in the city of Detroit. He also found that in talking with vegetable producers in his district much time was lost and that frequently products had to be brought back to the farm from the Detroit market. There was much interest in a marketing association in his district. So starting from scratch, Clyde Cunningham and the vegetable producers in his four-county district formed an organization, bought land, sold the stock, drew the plans and built a building to handle the marketing of vegetables in his district. A manager has been hired who will come and take over the operation of this vegetable marketing association. (It is not a cooperative.) In this way larger quantities of graded produce will be assembled in one place. This will enable buyers to come to one place to obtain a full load.

Drawing on the work of the third District Marketing Agent, I would like to tell you of the assistance he has given to producers in his area. He has found in his district that packages demand a lot of his time. Used crates and packages from other areas have traditionally been used in Michigan. It has been found that the trade does not like products which are packed in dirty, broken and otherwise unattractive crates and packages. It also has been found that the bushel container is not liked very well by the trade. He has worked with paper manufacturers and also with the wood package manufacturers. He has learned that a three-quarter bushel basket for peaches is liked very well by the trade and that the trade is willing to pay almost as much for a three-quarter bushel basket as for the full bushel basket. Producers, in selling their peaches in three-quarter bushel baskets, have been able to realize more from the sale of their peach crop than if they had sold their crop in bushel baskets. He has found that the trade likes a strawberry crate with room above the botton layer so that the liner for the top layer does not smash the berries. This year this new crate has been working out very well. The berries are arriving at the market in very excellent conditions. Because of this, the retailers are happy. The strawberries are bringing more money per box and per crate than if they had been smashed.

A tomato carton has been used. This carton holds eight to ten pounds of tomatoes. It has been found that the bushel and the half-bushel basket for tomatoes are not wanted by the trade and that this eight to ten pound carton is very much desired. Be selling tomatoes in this smaller package, the trade is happy and the producer is able to realize more money than if he had sold them in the larger container.

A cucumber carton has been developed. This cucumber carton enables the producer to sell to a better advantage than in a large basket.

Closely associated with the use of the new containers is a more informed producer. More informed in the terms used in the trade, particularly marketing and grade terms. This District Marketing Agent is working very closely with personnel of the State Department. The State Department of Agriculture has been very happy to provide personnel to hold joint meetings with our Marketing Agents. At farmer meetings producers are told about grading. They are told what makes the No. 1 pack, they are told what the tolerances are and why the produce which is rejected on the market is usually rejected. Farmers, State Department of Agriculture workers and Marketing Agents all have stated that these joint meetings have been very good.

The Extension Service in Michigan has been active down through the years, but the major efforts have been directed toward the increased production of agricultural products. District Marketing Agents working along side of County Agricultural Agents form a very important team. In Michigan in the past year joint meetings called by District Marketing Agents and County Agricultural Agents have proven very productive. The County Agricultural Agents who are working with District Marketing Agents have grown to appreciate the assistance which the Marketing Agents can offer and are leaning more and more upon the District Marketing Agents for marketing help.

Also assisting producers in increasing marketing efficiency are the other two phases of our Extension marketing work. The Retailer Education Specialists bring from the retail food industry the thinking of retailers. This thinking is passed to the District Marketing Agents who in turn take it to the farmers. Also our Consumer Information Agents have been transmitting to the farmer information from the consumers. And, Consumer Information Agents have been able to directly help producers.

Marian Kottke, who is in this room, was able to help a farmer last summer. And this farmer today will swear by Marian. On one of the many visits to the city market, she noticed that this farmer had beautiful tomatoes for sale. She noticed that tomatoes were not moving very well on the market that day. Her visit to the market was actually a stop on her way to the radio studio for a program. She threw away her prepared script and on the radio talked about the beautiful tomatoes which were available on the city market. On her next visit to the market the farmer was back with another load of produce and he was very happy to tell her that she had helped him sell 40 bushels of tomatoes which could not have been returned home because they were in just the right condition for canning.

Aid to Food Handlers

Our Retailer Education Specialists have been able to increase marketing efficiency by working with handlers and retailers. The Retailer Education Specialists in their meetings with retailers stress methods of displaying products, methods of trimming, ways of keeping foods fresh over night, and methods of pricing meats, fruits, vegetables and dairy products.

Retailer Education Specialists tell of the newest methods of packaging for greatest sales. They teach methods of sales projection. (Sales projections are used as a tool for forecasting sales.) Also, they teach retailers and handlers how to use record keeping forms. They feel that by teaching these factors which I have mentioned, handlers are able to do a better job of merchandising their foods and by a better job, I mean a more efficient job.

It has been found that the food retailer has not used much of the merchandising information, which has been available for a long time. Inventories are seldom kept in the small to average size store. Ordering tends to be done haphazardly. Product control, inventory control, refrigeration control, sales control, and pricing are done without the benefit of records. Doing all of these things in a haphazard manner, creates waste which, of course, needs to be eliminated to have an efficient marketing system.

The Retailer Education Program in the State of Michigan is not just a "talk" program. The next morning after the night sessions, the Retailer Education Specialists call upon the retailers in the class. Here specific questions relating to the operation of their particular store are raised. Retailer Education Specialists are available for consultation prior to and after the night meetings. We have many retailers in the State of Michigan who testify to the help they have received from the Retailer Education Program in Michigan. They can point with pride to many changes which have been instituted because of the information given through the program.

In many of our retailer training meetings the District Marketing Agent in the region and the Consumer Information Agent in the city, participate in the meetings. In this way, problems of retailers are transmitted back to the farms by the District Marketing Agent. The Consumer Information Agent is able to tell the consumer some of the things that the retailer thinks the consumer should change or should know. Also the District Marketing Agent is able to relate to the retailer why the producer cannot do some of the things the retailer thinks can be done so easily. And the Consumer Information Agent is able to tell the retailer why the consumer might not prefer to do her shopping as the retailer would like it.

Aid to Consumers

In our Consumer work in Michigan, information is prepared in the state office each week and sent to the eight out-state projects. In these out-state projects, information for mass media is prepared. Our Consumer Information Agents work primarily through the newspapers, radio, television, and professional groups. This information which is prepared weekly relates to the food products which are appearing on the markets.

Each of our Consumer Information Agents is in contact, both personally and over the phone, with members of the food trade. They have name lists, which they themselves have accumulated, which they phone or visit each week to learn what products are on the market, the condition of these products, and the price at which each product is moving in the trade channels. Consumer Information Agents also visit selected retail stores to learn for themselves if the products are actually in the markets and the prices that are actually being levied for these products in these stores. The information then is written up in press release form for the newspapers, is prepared in scripts or is taped for radio programs, and scripts and visual aids are prepared for television programs. Along with the materials that are sent to newspapers (both daily and weekly) is information which is sent to institutions. Marian Kottke in Flint, found that the labor unions were anxious to receive food marketing information to be printed in their labor publications. She also found that buyers for large institutions were very anxious to receive information on the food products coming on the market, the condition of these food products and the prices at which the food products were selling. Marge Gibbs found that the restaurant association in the City of Detroit was interested in receiving information telling about the commodities coming on the market, the quality and the price. So by preparing this information for these various agencies and for the various mass media, many consumers are told each week about the condition and supply of the commodities and of the price.

Consumers are told how to shop for the different kinds of foods. They are told about the sizes which are used. They are told how to select without damaging various fruits, vegetables and meats from the retail shelves or cases. The information which is given relating to methods of choosing are very important in marketing efficiency. Retailers have stated that consumers use different methods after they have been told how to choose different products by Consumer Information Agents. There is no question in the minds of these retailers that a program on consumer information is helping these shoppers do a better job, a more efficient job of buying food products in their stores.

Three weeks ago the Consumer Information leaders in our Michigan Extension Program circulated to many departments at Michigan State, as well as to many commodity-minded individuals, the schedule of releases from the Consumer Information office during the remainder of 1955. Each person was given an opportunity to state what he thought should be mentioned by the Consumer Information Agents in their releases during the remaining weeks of 1955. By this advance planning, the Consumer Information Agents' program is able to help inform consumers, wholesalers and retailers of the commodities that will come on the market in seasonally large supply.

By providing this information to the marketing trade and consumers, these individuals will be able to think ahead and plan ahead so that the seasonal peaks in the supplies of these commodities can be moved more orderly. By mentioning the products which are in heavy seasonal supply the commodities will move into the marketing channel much more evenly than without this information. The quality will be maintained and the price should not be depressed as much as usual.

Cooperative Program

I have mentioned the three phases of our new marketing program in Michigan. I would like to mention the work of our Commodity Marketing Specialists. They are state-wide specialists and have operated from the campus in East Lansing for a number of years. They have been very helpful in the past year. They have worked with all three phases of our new program.

All members of the Michigan Department of Agriculture have been most helpful. The Director, the Bureau Chiefs and many of the inspectors have attended meetings, answered direct questions and offered suggestions for improvements. Without the positive, helpful attitude of the Department of Agriculture our Extension task would be very difficult.

The Federal Extension office has been very helpful. This office has always been ready to send people to help with training and program planning. Many new ideas were received from the Federal Extension Personnel.

Members of the Agricultural Industry, marketing organizations and consumer groups have assisted by serving on a state-wide advisory committee. This committee has met four times within the past year. This committee has a broad outlook and a very helpful attitude toward our program.

Our marketing program was conceived as a cooperative program with Research and Extension sharing evenly in the state appropriation. Research workers have contributed materially to our marketing program during the past year. Here are a few examples. Research workers in Horticulture have participated with District Marketing Agents in marketing meetings where the subject was new varieties of vegetables that show good marketing potentials. Research workers in Dairy have explained types of cheddar cheese and how to handle and store cottage cheese to maintain quality and boost sales.

Experiment station workers in Foods and Nutrition have explained recent experiments and have advised our marketing people on the nutrient composition of various foods.

Agricultural Engineering workers helped design and erect a marketing building They are working on a gravity separator for potatoes.

Farm Crops workers are developing potatoes which will chip well. They are working with our District Marketing Agent in grain marketing.

The Poultry Department research workers have helped in many ways. They have provided information on eggs, chickens and turkeys.

Many research projects in Agricultural Economics have helped our Extension Marketing Program. One of the more important research projects is our Consumer Panel. Data from this project have been very useful and very much used by all three phases of marketing work. Marketing research work in Dairy, Fruits, Vegetables, Meats, Poultry and Grains has been used extensively in our new marketing program.

I feel this program has the facilities for extending research results very quickly. We are extending research results which are in mimeographed form. This permits us to present them much sooner than in bulletin form. Research workers have expressed satisfactions that their work has been extended while it was fresh or new.

I have given you examples of a marketing Extension program in action. We have the goals of a more efficient marketing system in mind. We think we are working toward it. We know we have a long way to go.

SERVICE PROGRAMS OF STATE DEPARTMENTS OF AGRICULTURE

Donald E. Wilkinson
Chief, Markets Division
Wisconsin Department of Agriculture

When I saw the first tentative program of this National Workshop on Marketing several months ago, I was happy to note the time being assigned early in the Workshop to this particular discussion on the responsibilities of our three groups. I am sure all of us are anxious to learn of the many fields of activities in which our groups are participating. We have just had these fine presentations by Mr. Rudd, enlightening us on the field of research in marketing as conducted by our Universities. Mr. Kramer has done an excellent job in pointing out to us the area of educational work as done by our Extension staffs. I hope in the next few minutes to present to you some of the activities in the field of service as conducted by our State Departments of Agriculture.

A Total Responsibility

I am sure that all of us as we have worked with one or more aspects of the marketing channel have found that our producers, processors, wholesalers, retailers, yes, even the consumers give little thought as to who does the job of improving quality, developing more satisfactory packaging or reducing retail prices. Their main concern is usually when will this be accomplished. The responsibility as they would perhaps define it, is not on any specific group of marketing people but instead on all of us charged with the responsibility of improving the marketing of our agricultural products.

Mr. Earl Butz, Assistant Secretary of Agriculture, in a speech to the Atlantic States Division of the National Association of Marketing Officials, a short time ago stated something that many of us have been emphasizing for years. To quote him, "Marketing is the most important phase of present day agriculture."

Perhaps because of the intangibility of marketing and therefore the resulting difficulty for the average lay person to understand the marketing problems, the tendency is for oversimplification. Everyone becomes an expert. You people, I am sure, have had many proposals presented to you for solving the surplus situation. Give this surplus problem to the average barber of America and he would have it solved while you get your hair cut. Yes, there are thousands and even millions of proposals.

Perhaps a basic question to all of us should first be: How can we best serve? Next we may ask, what facilities do we have? What talent do we have? What are the facts? What are the funds? To me these are questions that have to be answered by us before we enter into any new phases of work. To me, as one engaged in the field of service, I know the value of basing this service program on a foundation of sound information. To me the application of new marketing techniques, for example, to some phase of the marketing channel must first be based on accurate research. Secondly, the environment must be right. In other words, our Extension people, through their program of education, have laid the ground work. Those of us in service who are attempting to assist the industry in applying these techniques will then find, as we have found many times, our job much easier and our client much more receptive.

On the other hand as our friend, W. C. Crow, pointed out at the previously mentioned meeting of Marketing Officials, research results are worthless unless they are put to use.

I think it is evident that if this country is to move forward in the marketing of our agricultural products, it is imperative that research, extension, and service be coordinated to achieve one final product and that individuals or groups working in each of these specific fields function together in a spirit of complete cooperation, with increased marketing efficiency as the final goal.

The importance of this type of approach was emphasized in a meeting in Madison, Wisconsin, last fall when Secretary Benson's committees representing State Departments of Agriculture, State Extension Services, and State Experiment Stations met as one combined group to discuss and define their problem.

It is significant that the recommendation from this meeting was to favor an integrated program for the solution of our marketing problems. Procedures were even outlined by which this could be attained.

Service-A Mandate of the State

In presenting the service programs of our State Departments of Agriculture, I am cognizant of the fact that there is considerable variety between states. This, of course, results from the differences in legislative structure and, of course, agricultural importance. There are many states that have large active Departments carrying out their duties as prescribed by their respective state statutes. In some, as we well know, the Commissioner, Director, or Secretary of the Department is a political appointment. There are others and this happens to be the case in Wisconsin, where not even our Director is politically appointed. Our Department, through our Director, is responsible directly to a State Board of Agriculture, the members of which are appointed for 6-year terms. In this manner we feel greater stability and continuity of program is achieved.

I also know that there are a few states where there are no Departments of Agriculture as such and the duties are conducted by some other delegated organization.

As one studies the over-all field of activities of the Departments, it appears that they are responsible to the people of their state in 3 separate fields: information, regulation, and service. These areas are usually very clearly defined in the statutes of the states. The statutes of Wisconsin, for example, very definitely require the Department of Agriculture to provide a sound program of information for the agricultural interest of the state. We are, of course, required in many different places in the statutes to carry out the regulatory responsibilities as they relate to the many phases of our agricultural legislation. Likewise, our statutes very definitely have placed in our Department the responsibility of providing marketing service of many different types to our agricultural interests.

I think perhaps some of us have had the misconception that State Departments of Agriculture are entirely regulatory bodies charged with the responsibility of enforcing legislation as it affects agriculture. I hope that I am able to point out that this is only a part of the over-all program of responsibility that many of our Departments have to the people of our states.

I am very happy to point out that the service programs of not only the State of Wisconsin but many other states, through their Departments, have been increasing during the past several years. As our producers and marketing people realize the value of applying improved marketing techniques, we have had many more requests for service in this field. In some states this has meant increased appropriations as well as staffs.

Another important reason for this improvement in the service programs was the Agricultural Marketing Act of 1946. Through this Act, Departments, as well as you folks in research and extension, have, with the assistance of matching funds from the federal government, been able to enlarge your field of activity in many ways. I truly believe that the contributions of that Act and its resulting accomplishments are still not fully appreciated by all members of our Congress and even members of our respective state legislatures. I believe there is an opportunity existing for all of us, to not only wisely use the State-Federal funds in our marketing service work, but to make sure that the accomplishments of this work are brought to the attention of people in key positions.

Service Programs Enter Many Areas of Marketing

Because of the great variety of service programs in marketing conducted by our State Departments of Agriculture, it is impossible to discuss in detail any one project or even a group of projects. Logically, the Departments devote more time, effort and money to commodities which return the larger percentages of income to the producers of their respective state. Logically, also, you will find several areas of service devoted to each commodity. For example, I am sure that some of our friends from the southern states are much more familiar than I am with the service programs for cotton and tobacco. I can assure you that in Wisconsin, a great amount of service work is given our dairy industry, but we still provide important service to the tobacco interest of our state, as well as to other minor products which actually produce only a small percent of our total farm income.

So that this discussion may more easily be applied by you to the situation as it may exist in your own state, I have attempted to categorize service programs of Departments of Agriculture into 3 groups. I believe examples of each of these 3 groups will be found in most of our states. These 3 groups are: (1) State-Federal Service Programs, where both administration and funds are shared; (2) State Service Programs, where administration is handled by the State, but funds are matched by Federal Government, this would of course include our AMS project; and (3) the State administered and financed service projects.

A few examples of the first group I am sure will help focus the relationship of State with Federal. Under this may come Market News on the various commodities, our Inspection Service for Fruit and Vegetables and some other commodities; our Agricultural Statistics program. Of course there are others.

Through our Market News Service, we are able to assemble up-to-the-minute marketing information in our respective states, place it on our teletype wires and have it disseminated wherever needed throughout the United States. The degree of State-Federal relationship in each state in this Market News work usually varies with the importance of the commodities covered. Our major terminal markets, for example, have Federal Market News Offices where the information that is to be collected and disseminated will be of value to a large part of the nation. Some of our states have State-Federal Market News Offices, where cooperative agreements have been developed. This is the case in Wisconsin where Dairy Market News, especially on cheese is important to the cheese trade throughout the nation. As a result we have a Federal Market News man assigned to our office. Working with him, however, we also have a State Market News man covering fruit and vegetables. Other states, where market news information is of primary interest to only their state, maintain State Market News Services.

A recent survey conducted by the Commissioners, Directors and Secretaries of Agriculture indicates that there are 19 State Departments of Agriculture engaged in some type of State-Federal Market News work and 14 Departments with State Market News work.

One who has worked closely with the potato shipper who has just been informed that his carload of potatoes has been rejected by a terminal market receiver knows the value of another phase of our service program, the State-Federal Inspection work for fruit and vegetables. Through cooperative agreements our state inspectors are in a position to supply upon request inspection service accompanied by the official certificate. These fruits or vegetables can roll to any market in the United States and still receive official recognition for this inspection. This type of grading and inspection service has greatly facilitated the sound marketing with confidence of many commodities which must find their market hundreds and thousands of miles from their point of production.

All of us, I am sure, from time to time make use of the statistics assembled through the Agricultural Statistics program of our State Departments of Agriculture in cooperation with the Bureau of Agricultural Economics. Rapidly and uniformly, essential information is collected on a state level, compiled nationally and used to assist many different groups including the individual farmer in developing their respective programs.

The survey which I mentioned earlier indicates that there are 24 State Departments of Agriculture that have a State-Federal relationship for agricultural statistics work, while 9 other Departments have some type of separate statistical program. In 7 states the agricultural statistical work is handled by the State University, usually jointly with the Federal Government.

The second area of marketing service engaged in by our Departments of Agriculture is the state-administered projects with State-Federal financing. In other words, many of our AMS projects would fall into this category.

Since many of us are working with this type of program, I will not spend time discussing the background of this work. I have, however, found many of our representatives from Departments of Agriculture anxious to learn of projects conducted by other states. Quite often our marketing problems are similar. Through this sharing of information we are able to capitalize on work done by other states.

The last report from Washington indicates that this marketing service work conducted by State Departments of Agriculture is now going forward in 36 states, Alaska, Hawaii, and the Commonwealth of Puerto Rico. The fact that increased funds have been obtained for this total AMS program and that more states are involved and doing better jobs is evidence of the success of this program.

To give you a few illustrations of some of the AMS projects, I would like to begin with our host State of Kentucky where under the direction of the Chief of the Division of Markets, Mr. Mancil Vinson, quality improvement and market expansion work has been done for poultry and poultry products. Likewise, considerable work has been done in livestock marketing through the auction program and livestock grading.

In Oklahoma, under the sponsorship of the Oklahoma Department of Agriculture and the Oklahoma A & M College, poultry and egg cooking schools were conducted as part of an over-all poultry improvement program. North Carolina and several other states are conducting outstanding marketing service projects with grain. There are many states participating in the program for the improvement of quality and increased efficiency of marketing on our fruit and vegetables. Illinois, for example, under the guidance of their Marketing Chief, Dave Foreman, recently had a service program working with producers of pickles which enabled them to cooperatively market their product in a manner that returned greater income to them than would have been obtained through the established marketing channel.

There are several states with projects in one or more phases of dairying. In Wisconsin last week we released a report that to me is an excellent success story and one which cites the importance of this AMS program. As one of our projects we have done considerable work on the improvement of quality of butter as well as the work on grading, packaging, and distribution.

One of the first tangible indications of success was the signing into law just one year ago, the first state butter grading program in the nation which now requires that all butter sold in consumer packages at the retail level must carry the state or federal grade. This new grading law has enjoyed considerable success during this first year.

Now in a recent survey conducted by our Department, we come up with this startling information. During the 3-month period of January, February, and March of 1951, only 43.3% of our Wisconsin butter graded 91½ score or above. During this same period for 1955, over 65.2% graded 91½ score or above. In 1951 during these 3 months 35% of our total butter production graded 89 score or below. This year only 2.9% graded 89 score or less.

Quality improvements such as this soon reflect themselves through increased demand in the marketing channel whether its for Wisconsin butter or any other commodity of such direct importance to the processor and consumer.

The third type of service activity of our Departments of Agriculture, is the work done entirely by states with state funds and perhaps with some industry assistance.

There is, of course, considerable variety in this phase of service program among our departments; variety due to the importance of agriculture, the importance of the specific commodity, and of course, the availability of funds.

Unless we are specifically interested in special projects, there is not the interchange of information between states on this type of program as there is on AMS projects. Usually during our Marketing Officials meetings, as well as our workshop held each fall, we concentrate on the AMS program and not on our individual marketing activities. I will, however cite a few areas of this type of service work being conducted by our Division of Markets in Wisconsin, in hope that it may give you an indication of areas that may be receiving attention in a similar manner in your own state.

Because of our nearness to the Chicago Market, we have considerable difficulty with the marketing of our Wisconsin potato. Potatoes from Colorado, Maine, Idaho, and other states roll into that market well graded, well labelled, because of both state regulation and the inefficiency of shipping poor quality potatoes that distance. Truckers in Wisconsin on the other hand are able to buy from many producers and drive into the Milwaukee or Chicago market in only a few hours from central or northern Wisconsin. As a result our reputation during the past several years for quality potatoes is not what many of us would like to see. And yet, quality potatoes are produced in our state! During the past 2 years our Department has been working with our potato producers and marketing people and with the cooperation of the Extension specialists have been attempting to introduce a program which we hope will eventually correct some of these malfunctions of marketing.

Another service type of program in which we are presently engaged is on dairy food. June Dairy Month has long been an important event in our state, but this year it is receiving a new type of attention. In the past this event has been an excellent publicity and public relations program. However, we felt that we were not increasing the actual sale of dairy products to any great extent. As a result, the emphasis this year has been with the marketing people themselves where extremely close attention has been given wholesaler and retailer in an effort to stimulate their participation. The results are amazing. Over 800,000 pieces of point-of-sale material have been distributed every major chain as well as an extremely high percent of our independent retailers. This cooperation has not only reflected in the food page advertising but is found at that crucial point, the display case in the retail outlet.

It is too early to give definite sales results for this specific campaign. A similar campaign in October, however, resulted in the additional sales of over 10 million pounds of milk equivalent. We are sure June Dairy Month can better that record.

I am happy to report that this particular project is one administered and financed cooperatively with our dairy industry through the American Dairy Association of Wisconsin. Our funds and personnel are matched. I am also happy to report that our state June Dairy Month Chairman selected by our Department and ADA, and one of the finest we have ever had, is Henry Ahlgren, Director of Extension in Wisconsin. I think this indicates the fine relationship existing in Wisconsin between our agencies.

Another phase of service work in marketing that has received considerable support by our state, including our legislature, is the out-of-state market expansion work done by our Division of Markets, especially on cheese and more recently on nonfat dry milk. Eighty-five percent of our dairy products are marketed outside of Wisconsin. It is our feeling, therefore, that it is in these markets that we should be assisting the distributor, wholesaler, and of course, retailer. As a result we have developed during the past 4 years a program of intensive market-wide merchandising and promotion, developed with the counsel and guidance of our dairy industry of Wisconsin as well as many segments of the marketing channel that handles these commodities.

Our Wisconsin Cheese Weeks, as we call them, have resulted in such tangible success for retailers that our demands from A & P, Krogers, Topco and others is so great that we could be conducting one of these campaigns every week of the year in our major metropolitan areas, if our funds would permit.

Incidentally, I am happy to report that just before I left Madison, the State Legislature in both houses passed a bill requesting a 25% increase in the funds for this market expansion type of work.

Service work is also done in such fields as the organization assistance to our marketing cooperatives, the pool marketing of our livestock and in many other commodity fields.

As mentioned, I am sure that there are many similar programs being conducted by the Departments of Agriculture in the states that are represented by you people.

Opportunities Unlimited

While it is fine for us to compare notes on the successes achieved by our individual programs, the real opportunities still are ahead. This morning we have learned of the fine program of work done in research of education and done in extension. I have attempted to indicate to you the area of service supplied agriculture by our State Departments of Agriculture.

Marketing is challenging, our problems I am sure will never end. The job will never be finished. This is as it should be. This is the challenging phase of this interesting work. Those of us in service programs must always remember that they must be based on sound research. Those in research must remember that their findings are useless unless put to use. Research, extension, service all dependent on one another.

May this be in the minds of all of us as we benefit and learn from these workshop meetings and especially as we return to our home states. May we then share together our thinking and plan together our joint programs. Likewise may we constructively evaluate our respective fields of activity in a manner that will improve the total marketing program for agriculture of our great nation.

RETAILERS' RESPONSE TO CHANGING CONSUMER HABITS

Stephen A. Douglas
Director of Sales Promotion
The Kroger Company
Cincinnati, Ohio

The food retailers of this country are staging a great race to keep ahead of their competition by keeping ahead of changing consumer habits.

And visitors from foreign countries tell us we are doing a terrific job. Groups of consumers and foreign retailers visiting our land tell us that one of the great miracles of the United States that impresses them the most is the modern food supermarket.

The Great World War ... the period of prosperity ... the great new discoveries in processing and distribution of foods ... the high employment rate ... and the number of working mothers ... all have contributed to the changes in food retailing.

Possibly the greatest factor is the expanding market due to increased number of families and increases in births. Babies by the millions-millions more to come. Birth figures and early marriages have surprised and confused all the experts.

Every time I start to talk about the bounding birth rate and what it means by way of opportunity to retailers, somebody comes along with bigger and better statistics.

One thing you can count on, and perhaps its best to add it all together, is that by the early 60's the pace will be faster than ever.

Let me outline briefly eight ways in which food retailers have met the challenge of changes in consumer shopping habits.

Then I will give you a merchandising plan we use to develop values for the Great American Customer.

And, last, a short outline of how a product was changed ... how methods of distribution were changed to take advantage of -- in fact, to encourage a change in consumer shopping habits.

First, and what I think is the greatest of the Eight Ways, is convenience. The consumer is spending less time shopping -- less time in the kitchen-- less time at meals. For her convenience, therefore, food retailers have given her ... the supermarket -- all food under one roof, a one-stop shopping trip.

They have given her self-service meats. I have personally counted as high as 87 shoppers buying meat at one time in one of our large supers. Imagine 87 old-time butchers waiting on 87 customers at one time in one meat market.

We have given her 100 per cent self-service in almost every other department of the store ... hundreds of quick-fix foods. Look at the assortments of baby foods, heat and eat, ready-to-eat, open and heat, open and eat, quick fix frozen foods to save time and work. Today you can buy built-in maid service in foods that are available in the modern food store.

The big household-needs departments also have the complete assortment of paper products to help do away with dishwashing, laundry and ironing.

In today's faster checkout lanes, high speed conveyor belts and a parcel pick-up service is offered. For example, at our supermarket at Northland Shopping Center in Detroit, your parcels are whisked via underground conveyor from the checkout stand to our parcel pickup station located between the twin parking lots. Our cashier gives you a number when you check out. Drive your car to pick-up station, give your number to the Kroger attendant, and he will load your parcels in your car.

Throughout the store, fixtures, layouts, displays -- all are designed to let the customer shop with minimum physical effort and time.

Second of the eight ways in which food retailers have met the challenge of changes in consumer shopping habits is by providing a fine assortment of fresh foods, available all seasons of the year. Through coordination of processors, distributors and retailers, the homemaker today has "a farm at her fingertips." All this is made possible by dating methods, better work methods, improved inventory turnover, fresher merchandise in cans, in packages, in paper.

Third and fourth -- quality standards have been stepped up, insuring more uniform quality appearance and satisfaction.

It costs just about as much to package and distribute poor quality, non-uniform merchandise as satisfactory quality. Successful food retailers know they must give good, uniform quality every shopping day of the year.

The fifth way is cleanliness -- consumers demand greater cleanliness. The standards are higher than in old-fashioned stores. Clean stores, clean salespeople, and clean products are a must.

Next, to guarantee a consumer a "One-Stop Shopping Trip," retailers carry a greater variety of foods in all departments than ever before.

The modern supermarket carries three to five complete lines of baby food ... a pet food department almost as large as the baby food department... hundreds of frozen food items... hundreds of cheese products. This tremendous variety, I think, impresses our foreign visitors more than any one other thing.

Seventh, one of the basic reasons why the customer of today shops in a certain retail store is that they like the people in the store.

The smart retailer is hiring better people, training them well, giving them a good place to work. He is encouraging participation in Savings and Profit Sharing Plans. And the net result is better personnel -- happy personnel -- satisfied personnel ... happy, prosperous, satisfied people.

The Great American Customer wants to do business with friendly people.

And here is the eighth way -- add everything together and you have a value for the customer.

I define a value in a retail food store today as FRESH, UNIFORM merchandise of the right VARIETY and QUALITY, sold in a CLEAN store operated by FRIENDLY people, sold at the right price, CONVENIENT to buy -- convenient to use.

Now let us deal with the four-part merchandising plan that we use to keep pace ... to try to keep ahead of the changing habits of the consumer.

The first part of the "SELLING PLAN" is CREATE A VALUE.

Whether we buy it, make it, or create it, whether we sell a commodity, a service or an idea .. whatever we SELL must first measure up as a VALUE as far as the customer is concerned.

If it is not a VALUE, trouble lies ahead for the seller.

We must next PLAN DISTRIBUTION SO THE PRODUCT IS A VALUE.. both at Point of Sale and Point of Use.

We hear much about the Point of Sale. We hear very little about the Point of USE. Yet, whatever we sell must be a value at point of use to bring customers back to point of sale.

Here is a little verse that is more truth than poetry, when the customer starts to use some products at point of use.

"UP ENGINEERS - WE NEED THEE!"

The wrapping on my shirt, in vain
I try to break it; its cellophane.
The sardine, clad in iron or tin,
Impregnable, remains therein.
The jelly--rubber--sealed in glass,
Might just as well be cased in brass.
Our stuff's protected, there's no doubt;
Let's figure, how, to get it out.

Let's look at a couple of products that start out as a value. The distribution plan falls down ... and look what happens at Point of USE...

Picture an old man, retired, 82 years old. The time -- a cold night in December. All afternoon he had waited for delivery of a VALUE.

Finally, it was delivered. He rushed out in the cold, without hat or coat. It was not on the porch. So... back into the house to get his flashlight, and then hunt for it under the bushes. But he failed to find the product that night. So the product failed at point of use.

In one city in the middlewest, there are two great afternoon newspapers-- in strong competition with each other. These newspapers maintain big, fine organizations in large, modern plants... go the limit to score "news scoops" on each other...YET -- careless distribution of their product brings you this picture of an unhappy customer hunting for his daily newspaper, which unfortunately is on his roof, well out of reach.

In the retail food industry, there is a wonderful food if served fresh-- that's right, the egg. But its horrible otherwise.

A noted food scientist writes, "At changing temperature, an egg can move from top quality to poor quality within three days. Eggs must be transported, stored, and displayed at low temperatures to maintain quality. Yet, by actual survey, approximately 50 of every 100 retail food dealers are selling eggs from open displays a part or all of the time... still back in the open cracker barrel days with one of the most perishable of fine foods."

Next we come to presentation of the value. First, we must present it to the organization, so they know all about it, the distribution plans.

They would have the feeling that they can hardly wait to sell it.... that they are partners in the plan.

We must then tell the customer about the value, using all the power we possess so the customer will recognize the value as we do.

The fourth part of the plan is the spot where many organizations fail. This is the "follow-thru" to maintain the value at point of sale and point of use to continue successful sales.

Many start out well, but they fail to follow thru one month or three months later to keep that product a value... and to keep it selling.

An individual or an organization using the four parts of this plan in their merchandising plans will SELL MORE.

Now -- let's see how this plan works in actual practice on a given commodity.

This is only one of many for I could spend the remainder of the morning telling you of scores of new, exciting, wonderful developments in this great game of food retailing.

One summer day in 1944, fourteen officers and department heads of our company had a business meeting and luncheon in Cincinnati. It was a chicken luncheon.. but not good. The chicken was tough and lacked flavor.

The catastrophe turned the conversation to our own poultry business. We were not doing so well. As we laid the cards on the table, it developed that not one of those 14 leaders of Kroger was buying chickens from Kroger stores.

We were selling chickens in the same form as most of our competition. Was it possible that we or the industry had not recognized a change in consumer shopping habits? Was it possible that consumers were just quietly not buying chickens?

At that time, we purchased chickens from here, there and every place. Much of this poultry was the barnyard variety. They develop tough muscles from running around in the open, and different flavors from different kinds of food -- some fed, some picked up.

We sold chickens with the head on, feet on, insides in, and even feathers on in some locations. We cleaned 'em on the block after you bought them. It was a messy mess--heads, feet, entrails dumped into the waste can.

Now our chickens are fed and raised to our exact specifications, scientifically fed to produce maximum meat, minimum bone. They are fresh, have the same uniform flavor. They are killed today, transported tonight.

And they are sold tray-packed, cut up and ready for the frying pan. The waste goes into fertilizer at the packing plant.

And here's the pay-off!

For the whole year of 1945, we sold a total of 13 million pounds of poultry.

In 1953, our sales of poultry totaled 92 MILLIONS OF POUNDS. That's an increase of 79 MILLION POUNDS over 1945.

It took seven years to work out sources of supply... perfect delivery arrangements... and to package the fine product attractively as it should be.

Examine carefully the record of this change in chicken merchandising--in it you will find the four Parts of the Merchandising Plan I presented.

A value was created of a commodity that was not a value.

A method of distribution was created to insure the commodity being a value at point of sale and at point of use.

The retailer's organization was thoroughly sold and trained to sell the value. They were eager and enthusiastic to sell more of it.

The Great American Customer, by newspaper, radio, store display, was told about it. They recognized the commodity as a value.

Last but not least -- there has been a perfect follow-thru by the grower, the distributor, the retailer, to keep this commodity a value... to keep it selling.

The food retailers' response to Changing Consumer Habits is to recognize their wants, and to create and sell values that will satisfy those wants. Thus the Great American Customer may buy more, eat more, and there will be greater prosperity, happiness, and good health throughout the land.

Presentations at General Session
Tuesday Morning, June 21

HORIZONS IN MARKETING

Nathan Koffsky, Chief
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Washington 25, D. C.

My assignment, as I understand it, is to focus attention on long-run growth factors and their effects on the dimensions and directions of the economy. This, I hope, will provide a framework from which the marketing problems of the future will be seen more clearly. I propose to center discussion on a period some 20 years from now -- say 1975. With a certain period ahead in mind we can be rather specific on population and income growth and what they mean for future demands, particularly those associated with food and food marketing. But in order to appraise the potentialities of the economy for increasing our standard of living -- the only way in which economic growth has meaning -- we shall have to make two basic assumptions. First, we assume that a high level of employment will be maintained. This does not mean necessarily that we will have uninterrupted growth year by year. But it does rule out the possibility of a severe, prolonged decline such as in the early 1930's. Second, we are assuming peace or at least a trend toward world peace so that the fruits of increasing economic activity are available for peacetime uses.

Before we take the long look ahead, it is worthwhile to take a long look back to highlight the big changes that have occurred in the last quarter century. We will compare 1929 and 1954, both fairly prosperous years. Since 1929:

1. Population has increased by some 40 million persons, or about a third. Growth has been greatest in the South Atlantic and West, especially in the Pacific States where population has more than doubled in the last 25 years. In recent years, population growth in suburbs has been about 5 times faster than in the United States as a whole. With increasing life expectancy, the 65 and over age group has doubled, now accounting for more than 8 percent of the total population as compared with something over 5 percent in 1929.

2. The civilian labor force also increased about a third, roughly in proportion to the growth in population. But average weekly hours per worker have been reduced about a tenth. In other words, the total number of man-hours worked has increased about a fifth.

3. Productivity per man-hour has increased close to 80 percent. In agriculture, where much of the technological revolution has been concentrated in the last 10-15 years, employment has declined a third since 1929 and output per man-hour has more than doubled. Farm output in 1954 was some 45 percent higher than in 1929, with three-fourths of the increase realized since 1940. In recent years, output per man-hour in the economy as a whole and in agriculture has been rising faster than the long-term average of about 2 1/2 percent a year. This reflects heavy capital investment both in industry and in agriculture.

4. With more people each producing more, the economy is now twice as large as it was in 1929. Even with a higher tax structure, per capita real incomes, after taxes, in 1954 were some 45 percent larger than 25 years earlier. Per capita expenditures for consumer goods and services, again after adjustment to eliminate price changes, have increased a little over 40 percent since 1929.

5. Food expenditures per capita, in constant dollars, have risen about the same percentage as per capita expenditures for all goods and services. Thus, over the past 25 years, an increase of say 10 percent in real income per capita has been reflected in an increase of 8 to 9 percent in consumer expenditures for food, most particularly for the services attached to food.

6. Per capita consumption of food, however, increased some 13 percent between 1929 and 1954, a little more than one-fourth as much as the increase in per capita income. Actually, pounds of food per capita remains fairly stable from year to year. A good part of the increase in food consumption reflects shifts from relatively inexpensive foods such as cereals, potatoes and dry beans to meats, poultry and eggs, fluid milk, fruits, and vegetables which require considerably more resources both in production on the farm and in marketing. We are now consuming about a fourth more per capita of meat, poultry and eggs, a fifth more dairy products (excluding butter) and vegetables, and close to 10 percent more fruit. On the other hand, per capita use of cereal products has declined a fifth and of potatoes and sweet potatoes 40 percent. It should be noted that for fruits and vegetables where consumption in processed form has displaced consumption in fresh form to some extent, consumption in all forms combined has increased.

It is clear then, that the growth of income over the last quarter century has had much greater impact on that part of food expenditures involved in processing and distribution than on the volume of food moving from the farmer to the consumer. Last year, the total farm food marketing bill to get food to the consumer in the form in which he wanted it was around 30 billion dollars as compared with perhaps 20 billion dollars in receipts to farmers for food products sold. Let me make clear that I am not talking about the farmers' share of the retail value of a fixed market basket of food. The 30 billion dollar farm food marketing bill represents all the charges between the farmer and the consumer for all the farm foods consumed in 1954, including charges for restaurant meals.

Now let us look ahead to 1975 in terms of people, the incomes they might have, assuming peace and prosperity, and the demands arising from population, productivity, and income growth.

1. According to projections of the Census Bureau a few years back, population in the United States will increase to some 200 to 220 millions by 1975, depending on varying assumptions of fertility and immigration. The midpoint of this range, 210 million, would represent an increase of close to 50 million people, or some 30 percent from 1954. This is about the same percentage increase in population as that of the last 25 years. More recently, the Census Bureau has projected State and regional trends in population to 1965. These projections indicate that present trends are likely to continue over the next 10 years at least, with relatively low rates of growth in the Northeast, the West North Central, and the South Central States. Population growth in the Pacific region, however, is likely to be more than twice as fast as the National average. By 1975, also, the average age of the people will likely be higher, with 10 percent of the people 65 or older.

2. If we can maintain relatively full employment--a basic assumption--the labor force and employment will rise about in proportion to population and could rise somewhat more if current stable labor force participation rates of persons 14 years and over continue. We should expect continuation of the long time trend toward a shorter work week, perhaps by another 10 percent.

3. For purposes of this projection, technological development is assumed to raise productivity per-man-hour for the economy as a whole about in line with the long-term trend of about 2 1/2 percent a year. We will assume also that productivity in agriculture will increase much as in the past. These assumptions may well be conservative. We hear more and more about the spread of automation in industry--the process of replacing human effort and in some instances human judgment by mechanical or electronic

means. Recent applications of automation in food marketing that have come to attention range from the electronic eye that grades and sorts lemons to the Food-O-Mat distribution in food stores. Whether automation is the second industrial revolution or an extension of the old, we can reasonably expect that, as time goes by, further significant advances in the technology of production and of marketing will result. At this stage of development, however, we do not know when and how much of a factor it is likely to be.

4. With these increases in employment and productivity, the economy will again double in size by 1975. With some 30 percent more people, per capita real incomes in the United States would rise, under these assumption, by perhaps two-thirds, considerably more than actually occurred in the last 25 years.

5. What would such increases in population and real incomes mean for the demand for food and for marketing services attached to food? We probably should not expect that current income elasticities of about .8 or .9 for food expenditures and about .25 for food consumption, including a factor for continued upgrading of diet, would prevail 20 years from now. We should note that income growth of the magnitude indicated, would move most families to that part of the income distribution where food consumption is less responsive to income increases than at lower levels. By 1975, almost two-thirds of the families would have incomes above $5000 annually. The recent publication Food Consumption of Urban Families in the United States by Faith Clark and her colleagues in the Agricultural Research Service demonstrates this point. Even in the case of meat, one of the most responsive foods to income changes, the income elasticity shown in family budget materials for 1948 was a third smaller than in 1942, after adjusting for size of family and regional differences. Some decline in income elasticity for food consumption over the long run seems distinctly in point as there are limits to how much food an individual can consume. However, any decline in the income elasticity of food expenditures, including the many services that can be purchased with foods, is likely to be much less than for food consumption.

If we assume that income elasticity for food consumption itself declines to about .15 to .20 from .25, an increase of about 10 percent in per capita food consumption would occur by 1975. Even some decline in income elasticity for food expenditures to say .7 would yield an increase in per capita expenditures of 45 or 50 percent. In total, therefore, with some 30 percent more people, the volume of food marketed here will rise between 40 and 45 percent while that of food and services combined will almost double. The farm food marketing bill itself could well rise from 30 billions to 60 or 70 billions. Where we now devote $1.50 to process and move a dollar's worth of farm food to the consumer, some 20 years hence it may take $2 or $2.50 to move the dollar of farm products to the consumer in the form in which he wants it.

6. We would expect many past trends in food habits to continue. That is, per capita use of wheat, potatoes, and dry beans and peas are likely to decline--continuing past trends. But with more people, total consumption of these items could show some increase. Per capita use of fats and oils probably will change little in total. Although consumption of fluid milk per person is expected to rise, the increase in combined use of milk and milk products may be moderate. Per capita demands for meats and poultry are likely to increase to levels perhaps a sixth above the 1951-53 average. Per capita consumption of fruits and vegetables would also rise appreciably in the projected framework, with substantial increases indicated for citrus and for some leafy green and yellow vegetables.

There is little in this outline for future food requirements to indicate that food demands will outrun supplies in the next 20 years. Future demands, both domestic and foreign, may require a production increase of perhaps 40 percent or so from current levels by 1975. This could be met by continuation of past production trends. Whether farmers will receive satisfactory incomes under such conditions is a major marketing problem. Undoubtedly, if farmers are to match real income increases in the rest of the economy, which may well rise by two-thirds, some reduction in the number of farms, perhaps by a sixth or more, and some increase in average size will likely occur. As agricultural production for market becomes somewhat more concentrated and as the market becomes increasingly selective toward more expensive foods, we should expect farm products to improve in quality and in uniformity.

The probability that marketing charges will increase very substantially over the next 20 years and make up a still larger part of the consumers' food dollar indicates that one of the current important marketing problems is likely to be intensified over the next 20 years. Marketing margins tend to go up much more easily than to drop, thus absorbing much of the impact of rising consumer incomes on farm prices and farm returns. With the possibility that in the years ahead food consumption may well be less responsive to income changes than at present, farm prices could become more vulnerable to relatively small changes in supplies than they are now. It seems quite likely that over the next several decades we shall be increasingly concerned with what happens between the farmer and the consumer.

In this connection we should keep in mind that if retail prices of foods are reduced through efficiencies in the marketing system, market outlets for farm production could be expanded more than we have indicated and the farmer's position improved. Although data on productivity in food processing and marketing are not very complete, they suggest that productivity gains are somewhat less in food marketing than in the economy as a whole.

Finally, let me draw your attention again to the fact that as incomes grow the consumer will likely want more and more things done to food before he gets it. I have suggested that whereas now about $1.50 of services are attached to each $1.00 of farm food products moved, by 1975 perhaps $2.00 to $2.50 of services will be involved for each dollar of food. More workers are at present engaged in marketing farm products than in production. The spread will likely widen. It seems reasonable to expect also that this expansion of services in the marketing chain will come closer to the consumer than to the farmer. There are marketing problems in keeping up with population growth and mobility. There are the additional problems involved in appraising what kinds of services the consumer will expect for his food dollar. This, however, I must leave to you experts in the field of marketing.

ADJUSTMENTS IN MARKETING TO CAPITALIZE ON NEW TECHNOLOGY

Harry C. Trelogan, Director
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Washington 25, D. C.

Advances in technology offer a wide range of opportunities for exploration to accomplish the purpose of helping private industry take agricultural products from farms and deliver them to consumers in the most satisfactory form or condition at the lowest possible cost.

Some changes are induced by or made potentially available by technological progress in other quarters. New methods for handling products from mechanized farming such as bulk milk assembly and for displaying and packaging ready-to-cook meals are cases in point. Success with many of these innovations requires that technological changes within the marketing system accompany changes on farms or in homes. The bulk of the actual and possible changes in marketing, however, lie between the points where adjustments are being made to assemble mechanically-harvested products and to retail ready-to-cook food. They involve, for the most part, the transfer of known methods to marketing applications in procurement practices, organizational structures, and management procedures as well as in the more widely recognized functions of processing, materials handling and quality control.

The opportunities are so manifold that few contemporaries are likely to have sufficient perspective and vision to know of and to recognize more than a fraction of the current developments and their potentialities for our work. The best a paper on this subject can set out to do is to suggest the types and character of relevant technological developments, together with conceivable applications to marketing problems, and endeavor to stir up ideas in the minds of persons engaged in related research, education and service. The best an individual research or service worker can do is to acquire ideas particularly pertinent to his area of interest and responsibility and recruit the help of specialized associates to test the opportunities for worthwhile adoption.

Still in Mechanical Age

In approaching our subject, it seems safe to assume that we are still in a mechanical age that has been heralded particularly in this country for more than a century. The assumption leads to the suggestion that some of our best opportunities still lie in the adaptation of mechanical devices and equipment to marketing tasks and functions. This might strike you as a hazardous statement in view of all the new mechanical applications we have been able to witness within the short span of our own lives. Despite all the manual labor that has been eliminated, however, one cannot help being impressed with the large amount of picking up and putting down in marketing that still depends on the human hand and back. Mechanics appear to have been applied primarily to the most heavy work that taxes human strength and to the more precise tasks that tax human dexterity. Many simple easy tasks remaining to be mechanized can be observed in marketing. For the most part, these seem to be jobs involving relatively little volume or short continuity. They require mechanical devices that are not large, intricate, or expensive. Often they appear to the trained research mind as being beneath the dignity of scientific attention or too simple to be bothered with. In other words, the technology is well known and widely used. The application remains to be extended.

Successful application in some of these instances may depend upon the development of better organized work schedules which draw upon other types of technological development designed to obtain continuous systematic operations. Small as well as large work functions have to be synchronized into efficient production line activities in a manner that will assure sustained cooperation between units. Maximum yields from technological developments require the application of different types of technology so that adequate provision is made for detailed or relatively minor functions in an integrated operation. The accumulation of savings from numerous small corrections of this sort can bulk large in reducing costs, especially of labor that may not be fully utilized.

Closely related are opportunities for improving existing machinery. The first step in this direction is toward making machines simpler, less expensive, and easier to maintain and operate. Machines have characteristically been developed as large cumbersome units for high volume operations. The trick is to make them more universally adaptable to different size operations and to closely allied functions. In a sense, the research men's job is to continually make existing machines obsolete.

Automation

Thus far, instead of approaching complete exploitation of opportunities, accelerated mechanical progress has repeatedly opened broad new vistas for further development. Initial progress was confined in the main to the reduction or elimination of physical labor. The round-about production concept of the Austrian School of economists was evidently based entirely on capital equipment to replace manual work. But now rapid strides are being made toward reduction of mental labor. The more advanced steps extend to that currently very popular concept of automation. The introduction of automatic control and memory devices makes machines easier to operate even though they may be performing more numerous and intricate functions. The startlingly dramatic progress that has been made with cybernetics and electronic computing machines probably offers marketing applications beyond current comprehension.

Popularization of the term "automation" has brought with it such wide vision for application that I anticipate it would be impossible for one person to conceive of all the potentialities it probably conjures in your collective minds. The chances are, however, that most of you will think of it in terms of spectacular uses in areas or fields with which you are only remotely connected, such as defense operations. It occurs to me, however, that it merits consideration in more prosaic terms closely allied with your own assignments. We need to think beyond its application as a control mechanism for internal operations of engines or machinery and consider its possible adoption in such marketing operations as sorting and grading tables, packing and packaging lines, grain elevating and dumping operations, processing sequences, wholesaling and retailing functions, and management aids.

Need for Classification

Statistical techniques that have short cut the requirements for clerical work now appear to have tremendous possibilities for bringing together and simplifying management information for decision. But this must be regarded as only one potentiality that happens to have impressed me as an individual. As a means for obtaining broader perspective we could use a comprehensive classification of actual and potential technological applications to agricultural marketing. Recent developments that have come within my limited range of observation lead me to suggest the following topics for inclusion in such a classification:

1. Technological developments to reduce manual labor.

   New sources of power might be included here not only from the standpoint of obtaining additional energy, but also to replace existing sources that are less efficient in use of either raw materials or human energy. Dieselization of engines is an example currently in progress. Atomic power holds promise for the future. Simple equipment to automatically code or price-mark individual oranges or grapefruit for checkout in a retail store is an example that brings this general topic close to our interests.

2. To improve product handling.

   Belt, roller and other types of conveyors together with palletized loads and lift trucks have contributed much and can contribute more to this objective. Recent work on using liquid media to sort or to carry fragile produce seems to offer future possibilities.

3. To alter environment.

   Temperature and humidity controls accompanied by advances in instrumentation have already found wide use in improving storage and transport facilities. Recent work on moving air through grain instead of grain through air for conditioning indicates an illustrative future trend with the further use of similar methods and facilities for administering fumigants and insecticides already under exploration. The use of radiation treatments for insect and disease control is likewise receiving current research attention.

4. To increase man's perception.

Among many items that could be cited here are new chemical tests such as chromatography for determining product composition or sedimentation tests to short cutting bread-baking-quality measurement of wheat; physical tests for accurately comparing product color, viscosity and other attributes. Flourescent light measurement for detecting bacteriological contamination in the interior of eggs is a recent application in our area appearing to have fascinating possibilities. Using liquids of different density to sort products by quality also is intriguing.

5. To reduce mental work.

Conventional adding machines and calculating machines are being superseded by modern electronic computing devices as effectively as they superseded the abacus. In the 5 or 6 seconds normally required for a multiplication on a desk calculator, some 2000 comparable calculations can be made with one of the new digital computers. Card, tape, and wire records available from computing machines can outmode the copious worksheets, sales slips, and inventory records still prevalent in much of our marketing system.

6. To improve communications.

Aside from the recording devices just alluded to, tape and wire recordings are being effectively used to transmit orders, instructions, and other essential information needed at different times and places for efficient intraplant operations as well as for communications between independently operating companies. Television holds promise of much more widespread application to market operations than has been used up to now.

7. To eliminate, reduce or combine functions.

Since self-service retailing pointed the way to reduce the need for clerks in stores, innovations throughout the marketing system have permitted reorganization of activities to short-cut established methods. Experiments extending from field grading and packing of vegetables on the assembly side, to jumble packs and displays of fruits and "keydozzle" retailing suggest the array of possible changes. Adjustments in interfirm as well as intrafirm operations may open the way to considerable simplification of market structures compared with the current situation where changes tend to be made independently by different specialized market operators. Modernization of wholesale produce markets well illustrates what can be accomplished through unified group effort.

8. To improve merchandising.

   Processing, packaging, and display techniques for attracting customers have been used for a long time, but the trend toward so-called built-in-maid service in food products extends the bounds of opportunity for this type of development many fold.

Gaining Acceptance

Recognizing opportunities for market application from the vast array of technological developments is only the first step toward getting market adjustments conducive to their adoption. This must be followed with research that translates an idea into tangible demonstration of its practicability. Then comes the job of selling the proposal to hard-headed businessmen.

Conditioned as we are to change in our still unfolding industrial revolution, we still must anticipate resistance to change. Businessmen engaged in marketing can be listed among those reluctant to change their methods. In appraising newly proposed methods, equipment, facilities or organizations they are more likely to be influenced by economic considerations than by sociological, moral or philosophical considerations. A proposal must not only look good; it must pay off. Moreover, it must be profitable to those who pioneer the change. These points need to be taken into account in our work.

Rarely may we expect to come up with proposed innovations the advantages of which are so self-evident as to induce immediate adoption without associated research, service, and education to sell the idea. One reason for this is that the introduction of market innovations based on new technology will almost invariably incur diseconomies resulting from displaced capital equipment or labor. Our tendency as proponents of change is to become so enamored with the favorable prospects of changes we espouse that the flotsam of disruptions or dislocations within industries is often overlooked. This leads to impatience with business management prone to stick with established methods rather than invest in or adjust to new methods until competition forces the issue.

More Complete Research

One way to overcome such resistance is to do a more complete research job that will provide education and service workers with convincing facts regarding the advantages of the new. Such research will likely place more emphasis on cost analyses designed to assess the savings to be gained. Such research must give due account to the costs of abandonment of sunken investments. And it may give more consideration to opportunities to convert existing capital and labor to new operations.

A recent experience illustrates this last point. Vacuum cooling of lettuce before transcontinental shipment promised to eliminate the need for some 24,000 pounds of ice per car or an aggregate of some 250,000 tons of ice in a shipping area. Adoption was retarded by the natural reluctance of those owning the ice - making equipment to forego its use. Further inquiry tended to overcome the problem by showing how some of the ice production facilities could be adapted to drawing the vacuum required for the new method.

Another type of study useful in aiding managerial appraisal and adoption is that conducted by John M. Brewster on "Comparative Economies of Different Types of Cottonseed Oil Mills and Their Effects on Oil Supplies, Prices and Returns to Growers." This study explores the scale of operations where adjustments might be warranted and the probable industry-wide impact on prices, returns to growers and processors and other factors, should shifts in methods to take advantage of new technologies occur. The study should help business management make intelligent decisions regarding the best adjustments under the varying circumstances of numerous firms in a far-flung industry. The study, by the way, is sufficiently technical that it will need ample interpretation by extension and service workers to make it useful to most mill managers. This comprehensive study is to be followed up with a further investigation of how and under what circumstances existing facilities can and should be converted to new processes. In this phase of the study I anticipate much more attention will be given to appraising economic feasibility of adjustments after giving due consideration to depreciation and obsolescence, especially in circumstances where new capital will be required to maintain a marginal activity.

Public research as intensive and probing as this particular study can hardly be justified unless it has widespread usefulness. In this instance, the answers arrived at have rather universal pertinence among literally hundreds of existing plants. Moreover, their impact may redound to the benefit of hundreds of thousands of farmers who are dependent for income upon the products involved. Few, if any, of the firms and certainly none of the farmers could afford such research. This situation characterizes much of the investigation awaiting marketing research. Small firms are still the prevalent operating institutions in agricultural marketing and the gains they make in operating efficiencies are generally passed to many more producers and consumers as competition can be depended upon to require.

Working With Industry

We sometimes hear the argument that marketing adjustments to technological change would come eventually without the services we as public servants have to offer. This argument cannot be effectively refuted if the time element is eliminated from consideration. What might happen ultimately cannot be judged accurately. We can only cite instances of opportunities that have remained dormant until our efforts have prodded acceptance. Assuming the argument to be correct, however, there is still a strong case for our work on the grounds that we are speeding and facilitating adjustments.

Viewed from this standpoint, our job is to help industry help itself. This is true even though the basic support for our work stems from other parts of the economy. As marketing margins or spreads widen - and that appears to be the outlook - farmers are likely in the future to be even more insistent that marketing agencies become more efficient, especially in terms of increasing productivity of labor to keep pace with rising wage rates and with comparable advances in other sectors. Farmers feel they have a right to ask this of market agencies because of the progress they have made in their own productive efforts. They feel also that marketing progress can be helped by our research and extension services, because they attribute much of their own achievement to such assistance.

Decisions Made by Management

Decisions on making adjustments in marketing to capitalize on new technology are made by industry management. Business decisions have to be made by those who assume the financing and bear the risks associated with the decisions. There is, nevertheless, a real public interest in obtaining the kinds of decisions that will promote efficiency of operations and avoid or minimize business failures. Losses from marketing activities eventually have to be borne by either the producers or consumers who are served by market agencies. In view of this public interest, our responsibility is to work with management to aid in obtaining intelligent and timely decisions and in facilitating the adoption of improved methods.

A phase of the job of facilitation is that of conditioning the recipients of marketing services to accept the changes. Habits and customs of farm sellers and household buyers are also subject to rigidity. Inducements to change must be found in such forms as greater convenience, improved quality or better prices.

Another phase of the facilitation job is that of anticipating modifications required in different parts of the marketing system if a change is introduced in any one part. This often brings into play the types of technology that are concerned with examining marketing channels and altering the organization of marketing structures to eliminate operations that can be dispensed with or to combine, rearrange or otherwise improve functions that have to be performed. Consider, for example, the extensive alterations of assembly, processing and distribution methods and organization of methods that were required throughout the entire route from farm to dinner table before the frozen food industry became a reality. Consider how many additional changes may still be in the offing before this development reaches full bloom.

Finally, let me remind you that to help industry help itself we shall have to direct our attention in the first instance toward helping those we work with attain their own objectives. In other words, to obtain industry cooperation, which is imperative, any adjustments we propose must be profitable. This is thoroughly consistent with our own objectives; progress toward greater efficiency has every right to be rewarded. It is the incentive entirely accepted within the American tradition.

At the same time we have the further obligation to promote and facilitate competition which is also accepted as an essential of the American way of getting ahead. Effective competition provides assurance that gains derived from public research and service help won't be held too long by only a few. It is the best assurance farmers and consumers have that they too will share the benefits of greater productivity.

Presentation at General Session
Wednesday Morning, June 22

BALANCING LABOR, EQUIPMENT, AND OTHER RESOURCES TO OBTAIN MAXIMUM EFFICIENCY

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I. Introduction

A. Balance concerns itself with choice and decision making in the combining of resources that will bring about the greatest value of product or service per unit of inputs for achieving a given objective.

1. It deals with the choice of alternatives
2. It is the science of combination

B. Balance has become important because it is necessary to extract the maximum effectiveness from the firm's basic operating ingredients, i. e. labor, equipment, materials and plant facilities. These ingredients, combined in varying proportions, bring about various degrees of success or failure in terms of profitable operations. The plant facilities are the common denominator for the effective utilization of these basic operating ingredients and includes the proper building, adequate plant layout, appropriate materials handling, and supporting facilities.

C. In the marketing channel, more and more operations are performed to benefit the consumer.

1. The consumer wishes to do as little as possible
2. The consumer is willing to pay a reasonable increase in price

D. Objectives of balance

1. Minimizing cost
2. Speed

II. Component factors of balance

A. Labor

1. Management is responsible for furnishing a correct amount of labor, plus leadership; the right equipment; and the right method for the various tasks to be performed.

2. Imbalance when one crew is integrated with the activities of another
3. Imbalance at integrated work stations
4. Imbalance because of poor method in the use of equipment
5. Imbalance when labor is not fully utilized at an operation

B. Processing equipment, degree of mechanization

1. Do not complacently accept the process, methods, or equipment
2. What is the latest state of technology?
3. What new processes, equipment, or methods should be developed?
4. What capacity should the equipment have? What about future expansion and growth?
5. Scale of operation influences choice of equipment. Fixed costs are best absorbed at capacity operation.
6. Are processing methods permanent or temporary?
7. New equipment and methods to pay for themselves over older or others within a reasonable period of time.
8. Automation means the continuous and automatic handling and processing of a product. It consists of relating, coordinating, and integrating machines, controls, and processes to the extent that the product flows from primary state to useful end-product automatically without the use of human hands.

   a. It can deal only with repetition, which hardly applies to distribution since the infinite assortments and different quantities people want vary kaleidoscopically with each transaction and between transactions.

   b. Properly designed automation will:

      (1) Increase production per unit of time
      (2) Lessen processing space per unit
      (3) Reduce "in-process" inventory
      (4) Produce considerable drop per unit in labor costs
      (5) Maintain more uniform results because of minimum dependence upon the human element
      (6) Reduce unit cost

   c. Disadvantages:

      (1) Relatively large scale of operation required
      (2) Increasingly costly down time, regardless of cause
      (3) Larger investment required
      (4) Increased need for more highly skilled maintenance men

C. Materials Handling

1. Materials handling is the picking up and putting down, moving of materials and products in any plane or combinations of planes, by any means, which include storage and all movements except processing operations.

2. It is the artery over which the life blood or processing and distribution must flow.
3. Equipment used might be as simple as a two-wheel hand truck or as complex as a completely integrated conveyor system.
4. Efficiency in materials handling is secured by:

    a. Moving materials a minimum distance
    b. Moving materials in direct line of flow
    c. By increasing the proportion of use time to idle time of the transporting unit
    d. Using unit loads where applicable
    e. Using more mechanical equipment where the economics of the situation justify
    f. Moving materials as continuously as possible
    g. Where storage is involved, by selecting equipment so as to permit best utilization of cubic space

5. Distribution, unlike processing, brings about little or no change in the basic product and distributors therefore are primarily handlers of material.

D. Plant Layout

1. Plant layout is an analysis and integration of equipment, materials, work centers, floor areas, materials handling and labor for the purpose of achieving an efficient and balanced arrangement for processing a product or supplying a service.
2. A specific output at maximum efficiency requires a definite plant, space, equipment, organization, and employees.
3. Expansion plans should be kept in mind
4. Materials handling operations can be only as good as the physical layout of the facilities will permit.
5. Processing time and costs are at a minimum when the product progresses through the various processes in a continuous flow and with a minimum of back-tracking or cross-hauling

    a. Get away from batch or lot processing
    b. Continuous flow saves in the number of materials handlings
    c. Work for a direct line of flow and an automatic route

6. Benefits of sound plant layout

    a. Improvements in production processes and methods
    b. Greater production capacity for a given floor area
    c. Minimizes materials handling
    d. More efficient and balanced use of equipment and labor
    e. Reduction of the amount of materials in process

E. Auxiliary departments and services

1. Facility balance requires that auxiliary departments and services be provided in adeqvate quantity and quality to service the process and its employees.

    a. Shipping and receiving
    b. Storage space
    c. Engine room
    d. Laboratories
    e. Personal facilities
    f. Electric power and light, steam, ventilation, humidification, dehumidification, etc.

F. Quality

1. Conserving quality of materials increases output of saleable products and decreases costs of production and distribution.
2. Processes and equipment selected considering their effect on quality
3. Labor utilization and work methods to be devised with consideration of their effect on quality.

III. Integration for balance

A. Processing costs are minimized and processing time reduced when equipment, labor, materials, and facilities are applied in a balanced relationship.

B. Scale of operation and available funds has a direct influence on the type of equipment, amount of labor, and supporting facilities that can economically be used.

C. Establishing the capacity for the design is basic to a balanced system or operation.

1. Provide for future growth to minimize rearrangements
2. Balance for the present and future may be a compromise

D. At each operation there should be a balance between equipment, labor, and facilities for working on the material.

E. Sequencial operations are in balance when each requires about the same elapsed time.

1. Changing the sequence might facilitate operations.
2. Be careful that improvements made in one step of a system are not prevented from "paying-out" because that which comes before or that which comes after cannot take advantage of it.

F. Lack of balance causes "bottlenecks"

IV. Techniques to assist in achieving balance

A. Flow process chart

1. It portrays, by the use of symbols and a brief description, operations, inspection, transportation and storage as the product or material flows through the facility.
2. Aids in visualizing what takes place in the facility and in exact sequence.
3. Aids in analyzing present or contemplated activities with a view to improvement.

B. Flow diagram

1. A visual presentation which shows to scale, on a plan view of the facility, where the various operations are performed and by the use of lines and arrows, indicates the flow of work.
2. Indicates the amount and order in which products or materials move within a department and from department to department.
3. Check for back-tracking and eliminate or minimize.

C. Flow process charts and flow diagrams aid in visualizing the complexity of processing, steps involved, dispersion and relationship of operations from receipt of materials to shipping.

D. Costs

1. It is important to know with exactitude the costs for performing an operation with variations in labor, equipment, method and facilities.
2. Accounting methods not of sufficient accuracy
3. Built-up or engineered costs most desirable

E. Break-even analysis

1. A graphic device for bringing together diverse facts in a comprehensive picture.
2. May be constructed for a business as a whole, for departments of a business, for each product produced and for comparing alternative processes and equipment.

    a. Over-all analysis of the business

        (1) Portrays relationship of volume of sales or production to income and expense.
        (2) Break-even point is the level of sales or production that brings in enough income to meet expenses.
        (3) Fixed expenses are due and payable whether the firm is shut down or operating at full capacity
        (4) Regulated fixed expenses arise from the operation of the firm and are controllable within limits by management.

(5) Variable expenses rise and fall with variation in sales or production
(6) Some expenses have a part that is fixed and a part that is variable.
(7) Application

(a) Shows the relative importance of principle items of cost and how they vary with volume or activity.
(b) Enables management to anticipate the effects of its policies and decisions on the profitable operation of the firm as well as the effect of outside influences over which it has no control.
(c) May be used effectively in controlling and forecasting operating results.
(d) Possible to see effect of price change upon volume required to break-even and upon the profit or loss.
(e) When prepared by product line, the chart shows the contribution each line makes to the total profitableness of the firm.

b. Comparing alternative processes, equipment or methods

(1) Comparisons based on time (if speed is of the essence) or cost vs. performance
(2) Fixed and variable expenses are treated above

(3) No income line is involved:

(4) Application

(a) Predict cost or performance characteristics over a range of activity
(b) When several processes, pieces of equipment, or methods for performing the same operation are simultaneously compared, the break-even points for different scales of operation can be established.
(c) Facilitates the selection of the most efficient process, equipment, or method for a particular scale of operation.
(d) When a sequence of processes or operations are to be integrated, break-even charts for these permit selection of the process or operation at each stage that will bring about a balanced system.

Presentations at General Session
Thursday morning, June 23

ADVANCES IN QUALITY MAINTENANCE DURING MARKETING

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I would like to discuss some aspects of maintaining quality in agricultural commodities as they move from the farm to the consumer.

You are all aware that quality losses take place in most commodities, that they are no longer "farm fresh" when they reach you. All too frequently more than loss of flavor or attractive appearance occurs. The product is often made unfit for use by molds, yeasts, bacteria, insects or by undesirable changes in composition of a physiological or chemical nature.

What brings about these quality losses and what can be done to prevent them? Let us consider some specific commodities, beginning with fruits and vegetables because they offer some special problems.

Fruits and Vegetables

Respiration

In fruits and vegetables we have a class of agricultural commodities that are alive. The thousands of cells that make up the plant or plant part that we know as a fruit or vegetable carry on living processes. They require oxygen to remain alive. Through a process known as respiration, sugars or acids are oxidized with the help of enzymes. Carbon dioxide is given off and heat is generated. Respiration is a tearing down process for it uses up some of the substance of the cell. If fruits and vegetables are to be prevented from losing quality, respiration must be slowed down. Sometimes fruits and vegetables go on a binge and live too fast, using up food reserves and after a week or two of this type of dissipation they become the worse for wear. Put an apple in an overheated fruit store and keep it there long enough and it will lose all of its juicy crisp texture and show symptoms of old age and senescence. Keep the apple in cold storage and it stays young and full of vim and vigor for months. Why is this? Research has shown that temperature exerts a powerful control over respiration and other chemical changes. An apple in a day at 70°F. ripens as much as it would in 10 days at 32°. Respiration rates are good indicators of the pace at which the fruit or vegetable is living. For every 18°F. rise in temperatures, say between 32° and 80°, we have a 2- to 3-fold increase in respiration rates. This holds true for many other chemical reactions and gives good reason for the basic role of refrigeration in preserving perishable foods.

Molds and bacteria

We have been discussing the biological reactions that go on within fruits and vegetables which lead to deterioration. We must consider another cause of spoilage of many different crops, perhaps the greatest destroyer of all. As crops grow in the orchard and field they become covered with mold spores and bacteria. This is reasonable to expect, for the soil and air carry millions of micro-organisms. Most fruits and vegetables have protective layers of specialized, heavy walled cells that make up the skin or epidermis. These cells form a good barrier against the entrance of micro-organisms. But if the skin is injured, the mold spores or bacteria find a good medium on which to work in the juice of the injured cells. Most of the micro-orgarisms on the fruit or vegetable, which may be several million in number, are not decay producers but usually enough will be on hand to start trouble if given the opportunity. Some molds can gain entrance without assistance of careless workers, thanks to powerful cell wall dissolving enzymes they produce, but this is not often the case. Mechanical injuries are usually the site of infections.

Micro-organisms respond to temperatures much like the fruit and vegetables themselves. Low temperatures slow down their growth, and warm temperatures up to about 90°F. accelerate growth. High humidity or free moisture is necessary to germinate mold spores, which are much like seeds in this respect and their function as propagators of the fungi that produced them. So if we keep fruits and vegetables warm and humid, we usually increase infection.

How can we reduce chances for infection by decay organisms? Use good disease control programs in the orchard or field, handle the produce carefully to prevent skin breaks, refrigerate promptly, and use fungicidal washes or other treatments where they are available. More on control of decay will be given later.

Physiological diseases cause spoilage

Some diseases of fruits and vegetables are not caused by decay-producing organisms. Let's take common scald of apples as one example. It causes the skin of apples to turn brown. Scald is the most serious storage disorder of apples. It appears in some seasons and not in others. Oiled paper, used as wrappers or as shredded paper in the container, is the only good control method, but prompt refrigeration and delaying harvest until the fruit has reached full maturity are also important control measures. Breakdown of the flesh of apples and pears, usually a sign of overmaturity or old age, is another physiological trouble.

Potatoes and apples sometimes develop blackheart or brownheart when they are held in unventilated places or at too high temperatures. This is a disease due to a lack of sufficient oxygen for the cells to carry on respiration. Death of cells results; then the black color develops. All fruits and vegetables are subject to injury if they are deprived of oxygen. For this reason, we caution prepackagers of fruits and vegetables to perforate the plastic film used for this purpose. We must have holes in the film to let in oxygen for the fruit or vegetable to use, and to let carbon dioxide escape. Fruits and vegetables held in tight containers will almost always develop off-flavor and odors in a few days at warm temperatures.

Some physiological diseases of fruits and vegetables are caused by temperatures that were too cold, but short of freezing. You all know bananas can be chilled by temperatures lower than about 55°. The skin turns a sickly brown and the fruit fails to ripen. Mature green tomatoes also have a lower limit of about 50°F. Failure to ripen, susceptibility to decay, and poor blotchy color are symptoms of chilling injury which may appear if the tomatoes are held too long at cold temperatures. Pitting of the skin of grapefruit is another symptom of chilling injury Immature fruit of small sizes are most susceptible to the trouble. There are many other fruits susceptible to chilling injury, and for a fuller discussion of desirable temperatures for fruits and vegetables in storage and transit, you are referred to U. S. Department of Agriculture Handbook 66, The Commerical Storage of Fruits, Vegetables, and Florist and Nursery Stocks.

Estimate of spoilage losses in fruits and vegetables

A preliminary appraisal was made by the U. S. Department of Agriculture of the losses in agriculture in mimeographed publication ARS-20-1, June 1954. The estimates were based on inspection records of rail shipments at terminal markets and surveys of losses in retail stores and in the home. Decay was the most common cause of trouble and physiological disorders like scald, breakdown, blackheart, and tip-burn were also important. The total loss for spoiled produce in 20 important fruits and vegetables amounted to about 250 million dollars annually. We do not have any measure of consumer dissatisfaction because of spoilage or loss of quality, but, if a monetary value could be placed on it, the amount would be high. These figures are good evidence that there is much work to be done in preventing deterioration of quality and spoilage in fruits and vegetables during marketing.

What can be done to reduce these losses?

I believe the first step in correcting practices that lead to spoilage is to identify correctly the condition in question. Too often we have reports of shipments of produce in trouble, but the cause is given in vague terms such as "decay breakdown" or "rot". We should know what kind of decay is involved, and we must by all means distinguish between a physiological trouble such as breakdown and decay due to microorganisms. Qualified inspection agencies can be called on to identify the trouble. A series of handbooks on market diseases of the important fruit and vegetable crops has been issued by the Department to help to identify the causes of spoilage. When this has been done, we then have a better chance to uncover the cause of the loss. For example, some diseases like Rhizopus rot of berries or peaches make much growth only at temperatures above 50°F. Heavy decay of this kind in a shipment points to lack of good refrigeration. Several individual crops will be considered briefly to give a report of troubles encountered and new things tried to prevent spoilage.

Apples and pears

Decay control in the Pacific Northwest has been improved by a wash of Dowicide A (sodium orthophenylphenate) sold under the trade name of "Stop Mold". This is now used widely in commercial practice. It might be helpful in other apple growing sections. One of the newest methods of extending storage life of pears is packing them in polyethylene film lined boxes, sealing the film. The pears, through respiration, build up the carbon dioxide content of the air in the box to about 3 or 4 percent (normal air has about 0.5 percent) and the oxygen level is reduced to about 17 percent from a normal of 20 percent. This change in atmosphere composition is sufficient to suffocate the pears slightly, putting them to sleep, and extend storage life about 6 weeks to 2 months. When the pears are removed from storage the film must be perforated to let the pears get enough oxygen to ripen properly. As long as they are held at low temperatures, they can stand the treatment. This treatment is in commercial use for western pears and was used for about one million boxes of the 1954 crop.

Unsealed film liners are used for wilt-susceptible apples like Golden Delicious, both in the northwest and in the East. Sealed liners have not proved safe for apples.

Grapefruit, oranges, and lemons

Decay treatments have been used for many years for citrus fruits. Borax wash is still in use in California. Dowicide A-hexamine is in limited use as a wash in Florida. Biphenyl-treated cartons, liners, or wrappers are widely used in Florida and California. Better fungicides are being sought, but wider use of those now available and good refrigeration would help to cut down the heavy losses from decay. These losses usually show up after the fruit gets to market.

Peaches

What the peach industry needs more than anything else is good control of brown rot and Rhizopus rot. Much can be done by orchard sprays and dusts but there will always be infections taking place during harvest and packing house operations. A better fungicide than chlorine is needed in the hydrocooler and there is some promise that better ones will soon be available. Hydrocooling has improved refrigeration in transit very much and it is having a good effect on peach maturity. Green peaches are too green when they reach market if they are hydrocooled. Better quality comes from leaving the peaches on the tree longer and then refrigerating them adequately. The shippers and receivers are becoming aware of this. Better packages are called for if riper peaches are to be marketed.

Carrots

New refrigeration problems have come with the widespread use of consumer-size film bags for carrots. When carrots were shipped with tops on, they were packed in crates with crushed ice and the load was covered with ice. Now the shipper may decide to use fiberboard cartons for film bags of carrots. These shipments cannot be iced in the package or top-iced. Some shipments have shown as much as 35 percent decay on arrival. The remedy is to cool the carrots before packing, either by hydrocooling, icing the water in the washer, or icing the trucks of topped carrots as they come from the field.

Lettuce

The shipping of dry-pack lettuce in cartons is rapidly replacing the iced-crate pack. Here we have another change in refrigeration practice that calls for new equipment and methods. Refrigeration must be used in lieu of the package ice and top ice, formerly relied upon, to keep the lettuce cold. Vacuum cooling is used as a substitute for package ice to cool lettuce after packing, and bunker ice in fan cars must be used to refrigerate the carton pack lettuce in transit. In winter months when the lettuce is fairly cool as it comes from the field, precooling in the car with fans has proved to be a satisfactory substitute for vacuum cooling.

Lettuce has some physiological troubles. Tip-burn is a common one, causing the margin of the leaves to turn brown. It is related to warm weather during the growing season. Brown spot is another new physiological trouble that may cause brown spots to develop throughout the head of lettuce. It is apparently worse on the Great Lakes strains of lettuce, now grown widely, than it was on older varieties of lettuce. The remedy is probably going to be a change in variety.

Potatoes

Potatoes possess the property of healing wounds that should be given a chance to work. All that is required is a moderate temperature of about 55° to 75°F. and reasonably high humidities. New cells are formed and the wounded areas cork over in a week or more. For this reason, it is not advisable to cool freshly dug potatoes quickly to say 40° -- their best storage temperature. Let them cool gradually to this temperature, but get them down to 65° to 70° as soon as possible, for high temperatures can increase decay and physiological troubles. We experimented with hydrocooling potatoes in California a number of years ago, and other methods of cooling have been practiced. Cooling the tubers to temperatures lower than 55° or 60° does not improve market quality for it interferes with the healing process.

Mechanical damage to potatoes is the most common cause of spoilage and loss. A new concept is needed in handling this crop. Because they are dug from the ground and are often not high priced, potatoes are abused more than any other vegetable. They need to be handled as carefully as any other fruit or vegetable.

Sweet potatoes

Sweet potatoes also have the property of healing wounds by growing new cells. Curing of sweet potatoes after digging accomplishes this as well as bringing about chemical and physical changes that enhance quality. Sweet potatoes should be held 10 days at 85°F. and 90 percent humidity to cure them after digging. Recuring after handling or packing helps to control decay. Sweet potatoes should not be exposed to temperatures lower than 55° for more than a few days because of danger of chilling injury and resultant decay and poor quality.

Tomatoes

Most tomatoes are shipped in the mature green stage of maturity, and here we have a very temperature susceptible vegetable. To get best quality mature green tomatoes should not be held at temperatures lower than 55°F., and they should be ripened at 65° to 70°. Any attempt to hold back ripening by using temperatures of 50° or 45° will be paid for in poorer quality of the ripened product and an increase in decay. Many shipments of tomatoes may get into trouble with decay if they are a long time in transit under refrigeration. The tomatoes will look sound but when they are ripened, decay develops. If tomato shippers and prepackagers would treat the fruits properly, that is never really stop ripening but give it a chance to proceed, they would save losses and get better quality to the consumer. Picking the tomatoes just before they break in color would help quality. Ripening them to a more uniform red color before sale would also help to give the consumer better quality.

Grains and Seeds

In grains and seeds we are dealing with commodities that are far less active biologically than fruits and vegetables as long as they are dormant. If sufficient moisture is absorbed and temperatures are favorable, germination takes place and then they are extremely high in respiration and heat output. Moisture uptake favors mold and bacterial activity, and insect damage. Advances have been made in handling and storing grain by recognizing the limits of moisture content safe for storage and drying the grain to a safe moisture level. These are 13 percent or less for wheat, oats, shelled corn and similar grains and 11 percent for soybeans for storage in midwestern and northern areas. If these grains are to be stored for seed purposes, moisture contents one or two percent lower are required. Dry beans should have a moisture content not in excess of 17 percent.

Fumigants and chemicals to protect grains and seeds from insect damage in storage are now available and are given attention elsewhere.

Losses in grains and seeds during storage, other than insect damage, are estimated as 4.5 percent annually, amounting to $89,666,000 for cereals including wheat, oats, barley, rye and rice. Corn suffered a 6.0 percent loss with a value of $168,172,000. 1/ To the losses must be added insect damage which totalled $217,104,000 for all field crops for a single year.

Meat, Poultry and Fish

Preventing spoilage and loss of quality in meat, poultry and fish is largely a microbiological problem. Sanitation in preparation for market, quick and adequate refrigeration, and good packaging are the essentials for preventing loss of quality. Desiccation from exposure to dry air is another factor of importance in these commodities. Avoiding exposure of meat, poultry and fish to high air velocities and low humidities for long periods and the use of moisture-vapor resistant films in packaging have been of benefit.

Eggs

The quality of eggs deteriorate with age because of chemical changes that take place in the yolk and white, through the action of micro-organisms, and by absorption of odors. The shell of eggs is porous and permits loss of moisture from the egg as well as absorption of odors from the surrounding atmosphere. Preventing loss of quality and spoilage starts with producing sound eggs not contaminated with dirt and filth. Refrigeration is the best known method of preserving the quality of eggs. Low storage temperatures of 29° to 31°F. and humidities of 85 to 92 percent are recommended. Treating the shell with oil is a fairly recent practice to improve storage by retarding moisture loss and to build up a low concentration of carbon dioxide within the egg from respiration. Heat treating shell eggs to stabilize the white and kill the embryo is another method devised for prolonging storage life.

Summary

Prevention of spoilage and loss of quality calls for a close study of the commodity itself. In many cases, certain micro-organisms can be identified that give a clue to the remedy needed. Often the quality loss is not due to molds, yeasts, or bacteria, but to a change in the composition or physiology of the commodity. Here a production factor may be at fault or the wrong temperature in transit or storage. In some commodities like cereals, insect damage is the main cause of trouble. With a better understanding of the requirements of the commodity and the most likely cause of deterioration, protective measures can be worked out that will prevent the losses that are now experienced. New chemicals for combating insects and diseases, better refrigeration facilities, and improved packaging -- all offer promise for the future.

1/ These estimates are from the publication "Losses in Agriculture", U.S.D.A. mimeographed publication, ARS-20-1, June 1954.

INDUCING TRADE ACCEPTANCE OF RESEARCH RESULTS

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This is my first participation in a National Marketing Workshop. The fact that you are here for several days of discussion is evidence of strengthening support for work in marketing. That support is a challenge and an opportunity. I can recall when such a gathering as this would not have been possible.

When Harry Trelogan graciously invited me to meet with you today, I told him that I doubted I could make a worthwhile contribution to your discussions. It is a pleasure to meet with you, nevertheless, and if I cannot be of help to you I am sure you can be of help to me, and I shall learn something that will be useful to the organization which I represent.

A friend of mine in the publishing business - a master salesman - often says, "Nothing much happens until something is sold." There is much food for thought in that statement. It applies to ideas as well as to new discoveries in knowledge. It applies to politics, or business, or religion. We are all merchants. So, if people are to be induced to accept research results, as implied by the topic assigned to me, research results must be salable in the broad sense of that term. Even the theories of nuclear physics, based on pure research, had to be sold before we could enter the atomic age. Somebody had to put up the money to find out if they would work. What expedited the acceptance of those research results, of course, was the terrible need to develop a superior military weapon with which to end a world war. Research findings should meet a recognizable need.

What do we mean by research in marketing? Obviously, we mean something quite different from laboratory research in the more exact sciences. Research in marketing calls for a degree of cooperation and interpretation not required of the laboratory technician. It means dealing primarily with people and their business behavior. It means gathering facts and opinions, analyzing experiences and customs, and drawing conclusions which can be translated into action by those who may find such conclusions advantageous to them in their business affairs. Inertia is a powerful deterrent to change. Business is conducted for profit, and if marketing research results contemplate substantial new capital or increased operating expense, they need to be clearly demonstrable and capable of understanding by those who are expected to accept them, or they will encounter definite sales resistance.

You probably often ask yourselves what you are trying to do, and why you have been entrusted with public funds with which to do it. It seems to me a liberal admixture of introspection is always desirable in plans for marketing research. You could have long discussions about what is research in marketing or utilization, or what is service or regulatory work to aid the marketing process. These broad headings comprehend all the elements of distribution - preparation for market, transportation, processing, merchandising, and the numerous sub-heads, such as grading and standardization, carloading and handling, selling, advertising, publicity, and many others. But simply, and perhaps too broadly stated, it seems to me that what you are trying to do is to help get more people, here and in other countries, to buy more of the products of American agriculture. That is the goal of your efforts to help increase the efficiency of marketing. "Nothing much happens until something is sold."

And of course you want to do that within the framework of our competitive system of free enterprise. Incidentally, I read an article recently about a study - America's Needs and Resources - underwritten by the Twentieth Century Fund. All of you are probably familiar with it. This study makes the interesting point that the communist pie-in-the-sky ideal of "abundance for all in a classless society" virtually has been achieved already, and even worse, from the viewpoint of the men in the Kremlin, it has happened right here in these capitalistic United States. The paragraph referred to says, "Of all the great industrial nations, the one that clings most tenaciously to private capitalism has come closest to the socialist goal of providing abundance for all in a classless society". We have a marketing system that works. The reason you are here is to help make it work even better.

In considering the matter of trade acceptance of research results, it seems to me we need to think of the climate in which acceptance is to be achieved. Is it cold and desolate, or warm and receptive? I would say you are operating in the temperate zone. By "trade" we mean, of course, that large groups which buy, ship, process, handle, sell, and distribute agricultural products from the place of production to where they become accessible to consumers. Aside from transportation, these people represent the backbone of our food distributive system. They are businessmen who risk their own money and credit, and operate under conditions of intense competition.

So far as fresh fruits and vegetables are concerned (those are the commodities on which my observations here are based primarily), this group consists mostly of small businesses which do not have research staffs to evaluate your findings, or economic advisors, or numerous administrative assistants, or most of the other paraphernalia of big Business or big Government. The time of these men is fully occupied with their daily business transactions. Consequently, most of them are not students in the research sense; most of them are too busy to read extensively, or think they are.

But do not make the mistake of assuming that these men are not well informed in their particular fields of operation - they must be to survive. They are keenly interested in any research result which can be applied in their own businesses - one, for example, that will help them reduce operating costs, help to expand sales, or cut down losses from deterioration and spoilage. Such research results, when clearly stated and based on actual tests, are readily accepted and eagerly sought for by progressive operators who know that when someone can show them a better way to do something they had better look into it or they will soon find their competitors obtaining an advantage. Most of these men realize that yesterday's methods may not win today's markets.

Those of you who are engaged in such marketing services as standardization and inspection, market information and crop statistics, and certain kinds of research and regulatory work generally have received good cooperation from the trade and your work is highly appreciated.

We might take a quick glance at a few types of research projects which are more difficult to sell to the trade. There is always the question of the relative importance of general and specific research. It seems to be particularly applicable to the subject in hand. There are some research people who are eager to conduct marketing projects, but apparently are not quite sure about what they should undertake. In some instances, members of the trade have been approached with requests to the effect that research people be allowed to observe their operations, and even go through their books, to determine whether there is some problem which might be the subject of an interesting research project. Most of the members of the trade resent that type of approach and, in the broad interest of trade acceptance of research results, it would be desirable to avoid it, unless you know the people well and have carefully laid a foundation for what you are trying to do. Inducing trade acceptance should begin before the project is started as well as after it has been completed.

A considerable volume of marketing research has consisted largely of a description of marketing functions and how they are performed. Most members of the trade who look at such reports feel that they seldom find much in them that they do not already know. They know how they operate, their sources of supply, the outlets for them, and the effects of changing methods of competition. Hence, a quick conclusion may be that the chief reason for this type of research is to give the research worker something to do or perhaps to increase his knowledge. For the most part, such research projects do not find ready trade acceptance. They are not good examples of effective research trade relations.

I do not want to leave the impression, however, that all members of the trade are disinterested in general types of research. Many realize that research reports of a descriptive nature are useful to writers and research workers, and are helpful in giving the public a clearer understanding of the marketing process, and services required in making highly perishable commodities available to consumers in all parts of the country every month of the year.

Studies of margins or spreads between what the producer receives and what the consumer pays generally are not enthusiastically accepted by many members of the trade. To some they are interesting, but unless they point to specific ways for reducing costs they arouse little interest, although interest in such studies is broadening as they become better understood. Such reports do add to public knowledge of the marketing process. They refute unfounded claims that the spread between what the producer receives and the consumer pays consists largely of profits. They point up functions which must be performed and what it costs to perform them. I think such studies have a definite place in marketing research, even though they may be more difficult to sell from the standpoint of general trade acceptance. Such projects also develop tools for the research worker which may be useful and beneficial in other ways. The information they develop can be of great value to trade associations in public relations work. Some studies would have been more useful if the breakdown in costs among the various functions had been developed in more detail.

Now let us consider a few types of projects, of which there are many, for which trade acceptance is more positive.

Operators of apple packing and storage warehouses, particularly of the older type in the Pacific Northwest, were seeking ways of reducing handling costs. A research project resulted in developing more than a dozen recommendations which attracted much interest. One operator reported that by adopting several of these research results he had been able to reduce the number of men required in his plant from 27 to 9. The research dealt with improved equipment and methods for handling apples into, within, and out of a warehouse; improved methods of sorting, sizing and packing; as well as improved containers and consumer sized packaging.

Another project developed aluminum floor racks for trucks which were water resistant and resulted in substantial savings in weight. Before tests of these new racks had been completed several trucking companies had adopted them for all of their vehicles.

Another project constituted an effort to relieve the bottleneck at checkout counters in retail stores. An improved checkout counter was developed to make it possible to increase the productivity of the checker by about 38 percent, and within a few months more than 3,000 of these new counters were in use, and people in the industry immediately began making further improvements in them.

Our old friend, Professor Rasmussen of Cornell, told me of a study to find out how to merchandise sweet corn more effeciently. At first it was thought, he said, that packaging was probably the best way to sell local sweet corn, which is on the market for only about 60 days. But he found out that selling iced sweet corn in bulk is the best way to handle it. Here he had difficulty in restraining store managers from discarding all other methods before the experiments were concluded. They agreed that for local sweet corn the costs of packaging were prohibitive, and even with these high costs it was most difficult to maintain desired quality.

The modernization of wholesale market facilities, particularly in several of our large metropolitan centers, is long over-due. Progress is being made, and each year sees modernization programs completed. This is a type of work which calls for close cooperation with local people. All that research can do is to gather facts, analyze needs, and make recommendations.

One might wonder why trade acceptance of such recommendations often has been slow. The problem really is not one of trade acceptance. The trade has long recognized the need for modernization. Building a new wholesale market in a large city, however, involves all of the obstacles of local politics, ownership of real estate, union labor opposition because fewer jobs may be available, finding a suitable location, and the important question of financing. In most instances the trade itself is unable to finance a multi-million dollar project, and many are reluctant to move if higher rents in the new facility may not be fully offset by savings, even though convenience, comfort, and efficiency would be increased. The inroads of other forms of competition also are important factors.

The marketing system itself constitutes a vast research laboratory. It is a testing ground for new ideas, some of which may emanate from public research. Food manufacturers and distributors are engaged today in the most intensive probing of the collective consumer mind ever undertaken to find out consumer likes and dislikes and how consumer desires best can be met. Consumer opinion surveys also are the subject of public research. Most of these surveys reveal preferences which are important because they confirm previous research or experimentation, and they uncover dislikes or irritations which indicate opportunities for improving merchandising methods.

Roxy, one of the greatest of the great showmen, is reported to have said that theatrical producers continually make the mistake of trying to give the public the kind of entertainment it wants. As a matter of fact, he said, the public usually does not know what it wants until it sees it. Bringing that observation closer to our subject, if a thousand homemakers had been asked twenty years ago whether they would like to have potatoes packed in ten-pound bags, a convenient size to carry home, they probably would have had no definite opinion because they had had no experience with such a package. Their first reaction might have been a reluctance to buy potatoes in a package - some still are reluctant. Somebody, therefore, had to spend time and money experimenting with that type of package to find out whether consumers would buy it.

We all know of the tremendous change which has taken place in recent years in the packaging of foods and which is still going on. Much more research remains to be done. The fresh fruit and vegetable industry was about the last of the great food industries to undertake packaging of its products in consumer sized units. Some ten years ago a research project was initiated by the U. S. Department of Agriculture in cooperation with one of the large chain store organizations. Many people thought it was wasteful and unnecessary to ship carrots long distances with the tops on them. If consumers had been asked at that time whether they preferred carrots topped or with the tops left on, the preponderance of opinion probably would have been expressed in favor of carrots with the tops on them. Many consumers thought the tops indicated freshness. In the project referred to, store patrons were reluctant to buy topped packaged carrots, and after several months of trial it became necessary also to carry bunched carrots to maintain sales. But regardless of public resistance, the retailer in this instance, and others, persisted until probably 80 to 90 percent of fresh carrots are now retailed in packaged form and the tops remain at home.

Other illustrations could be cited. Such projects indicate how trade acceptance can be facilitated when the project is specific, and its feasibility fully tested and demonstrated. The success achieved from such projects, however, would not have been possible unless some people in the industry were willing to spend money and time to prove what they accepted as a sound idea. Inducing trade acceptance started before the project was undertaken.

There is another type of merchandising service which you may not consider to be research but which has some research aspects in it. I refer to that part of the merchandising program of the Association I represent and which involves merchandising service to retailers in connection with fresh fruits and vegetables. In cooperation with the U. S. Department of Agriculture, the United Fresh Fruit and Vegetable Association conducts training classes for retailers. Some 40,000 retailers have attended these classes which have been held in 169 cities. The results obtained in the form of increased sales and savings from spoilage have exceeded original expectations.

The training includes most of the problems arising in the operation of a produce department in a retail store and lays great emphasis upon the display, handling, and care of these products in order to take full advantage of their natural characteristics of freshness and quality. An equal, if not even more important, part of the project is that it has stimulated wholesalers to employ specially trained merchandising men for continuous follow-up work with their retailer customers to help them apply the principles taught in the classes.

It is estimated that wholesalers are now spending approximately $700,000 a year on this type of merchandising service which practically did not exist ten years ago. This indicates trade acceptance of a service of demonstrated value, but it had to be demonstrated. A research report setting forth the advantages of such merchandising practices would not have induced trade acceptance, or at least very slowly. They had to be proved under actual merchandising conditions. The specially trained merchandising men now available constitute a new force which can be used for special commodity promotions, ascertaining facts concerning retailer and consumer preferences, and assistance in conducting projects involving public research.

Often it is not easy to say where research ends and service begins. Another part of the merchandising assistance program of our Association consists of materials handling consultation. A trained member of our staff goes into the place of business of a wholesaler, on invitation of course, and studies the operations of the firm, primarily to see if he can suggest how a ton of merchandise can be moved from one place to another at less cost. Let me give you one illustration, out of many. A firm operating in an old building asked for help. After careful study, it was recommended that certain structural changes be made and some new equipment installed. In exactly four months the plan was completed and seven men were doing the work formerly done by thirteen men, without overtime. Other advantages also accrued, not the least of which was more satisfied workers who feel that management is on its toes and trying to make their jobs easier.

In another instance, an efficient operator was convinced that his delivery costs were too high but he could not put his finger on the trouble. He was contracting for the trucks he used. An analysis of his daily routes showed that he was using more heavy equipment than necessary and with a little planning and a few adjustments he could use lighter equipment at a substantial annual saving.

A report setting forth the principles, with illustrations, of cost analysis and materials handling is useful. But trade acceptance is facilitated when someone from outside the organization, skilled in such matters, can make specific on-the-ground recommendations. This may not be professional research, but it is a method of inducing acceptance of analytical study of definite problems with the results translated into specific benefits. We now have two men on this work and their time is booked months ahead.

Marketing research, especially specific research related to physical handling, needs industry cooperation. Few such projects can be carried on successfully without such cooperation. When the work is conducted on the premises of shippers or distributors they watch closely the way it is carried on, offer suggestions, provide facilities, talk about the project, and if it develops useful results they are readily accepted. Such projects require inducing cooperation before and after completion.

Title III of the Agricultural Marketing Act of 1946 specifically provides for the appointment by the Secretary of Agriculture of industry representatives to serve in an advisory capacity. These committees serve a useful purpose in guiding the marketing research and service program toward finding answers to practical marketing problems. The fusion of experiences and interests of industry and public research people is desirable from many points of view. It promotes cooperation and the acceptance of results, and develops confidence in and support for additional work in marketing. As evidence of this, there is a large backlog of pending projects recommended by advisory committees.

Trade associations, of which there are many in all important commodity groups, as well as the general farm organizations, are interested in research results. They provide a vital means of communication. They can promote research projects and assist in developing cooperation in organizing and conducting the work, and they can disseminate results and encourage their acceptance. There are opportunities for the research worker to develop these facilities further as a means of inducing trade acceptance of research results.

In summary, it seems to me the best possibilities of inducing trade acceptance of research results are (1) concentrate as much as possible on projects which will produce answers to problems facing the trade, and which have been recommended by industry advisory committees; (2) encourage and seek the cooperation of individual firms, and local and national groups depending upon the nature of the project; (3) describe the results in terms with solid meaning, using concrete facts with as specific interpretation and illustration as possible, setting forth advantages and disadvantages; (4) get reports out promptly (publishing results a year or so after the work has been completed is like reading yesterday's newspaper); (5) publicize results with releases to trade papers, trade associations, farm organizations, and Extension workers in a form which permits ready quotation and comment; (6) give trade associations a special summary of highlights of the study of special interest to their members and not rely upon them to find the information in a printed bulletin; and (7) attend meetings where the results can be explained by someone familiar with the study and the problems encountered, using visual aids and demonstrations whenever possible.

These are the conventional means of communicating research results. They are well known to you. Most of them are in use in varying degree. Personal contact, especially in small groups and on panel discussions, often can do more to stimulate thought on a particular subject than press releases and printed bulletins. If the merchandise is good, it will sell, and demand will spread. If it cannot be sold then doubt is cast on the use of public funds for such projects.

I would suggest also that interested trade association representatives be visited personally, when possible, to make sure they understand the project results. They will then be in better position to communicate the findings to their memberships, and can help induce trade acceptance and future cooperation in various ways.

Too often attempts are made - by people who should know better - to give the public the impression that the economic pains of agriculture are the result of a marketing system which is weak, inefficient, and greedy, and which consists of a gigantic conspiracy to ruin the farmer and unconscionably gouge the consumer. They like to quote official figures showing that farmers receive less than half of the dollar the consumer spends for food. They do not talk about the increased cost of labor and transportation nor the piling on of built-in services, such as an almost complete change-over in packaging, more refrigeration, air-conditioning, self-service food stores where shoppers can do all their food shopping under one roof with ample parking space, merchandising services, advertising, and commodity promotions - all charged to the cost of marketing and designed to encourage more consumer spending for food and to provide better service for better living. The distribution system more and more is called upon to replace hired help in the home. We are now peeling potatoes for hotels and restaurants, and probably will be expected to peel them for consumers when retail stores are better equipped to handle them. Convenience is demanded and consumers seem to be willing to pay for it.

Those who cry out about the weakness of the marketing system seem to want to ignore the fact that thirty years ago American consumers were spending about 25 percent of their disposable income for food, whereas now the same standard of food consumption can be met by spending 20 percent of their income. Actually, consumers are now spending about 27 percent of their income for food - substantially more than necessary to maintain the standard of consumption thirty years ago. We are eating more and better foods.

A marketing system which can do that is not weak or inefficient. It has broadened the market for the food producer. Hundreds of people from Europe have come here to study our distribution methods and go home eager to introduce them in their own countries.

Of course, our system can and will be further improved. That is the American way. No firm or group can survive long except by performance.

You who are engaged in public research can promote further improvement. Experiments in food preservation by irridiation could foreshadow great changes in food handling and distribution and open new vistas for research in marketing. You have a real responsibility. You are in a position of leadership which you need to exercise effectively and without presumption. With a broad perspective you can see opportunities not clearly visible to those with a more localized point of view. You cannot require anybody to do anything. But you can gather facts, interpret them, test them against experience and custom, break down inertia, and by logic and cooperation induce acceptance of research results when such results can stand the test of critical scrutiny by the man who must spend his money to apply them.

When research results are sound they will be accepted, later if not now. You are contributing to the sum total of industry knowledge and public understanding. That is the role of the researcher in any field of endeavor. Others will help tell your story when you give them information in a form they can understand and use.

Presentations at General Session
Friday Morning, June 24

POLITICAL AND INSTITUTIONAL BARRIERS TO TRADE IN FLUID MILK

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> /Efficient marketing of agricultural products may be facilitated by public provision of technical assistance and of promotion and perhaps by public regulation. On the other hand, marketing efficiency may suffer because of institutional restraints upon trade-- with "institutional" meaning either public or private or a mixture of both. With this thought in mind, the planning committee of the 1955 National Workshop on Agricultural Marketing asked a scholar from outside official circles to examine the "Political and Institutional Barriers to Efficient Marketing." On accepting the invitation, Professor Hardin limited his discussion to fluid milk in the belief that a somewhat thorough study of one commodity would make the best use of the available space. Readers should recognize that the general problem of the effect of institutional arrangements upon marketing efficiency occurs in the production, processing, and distribution of many commodities other than milk. Readers should also bear in mind that the following paper represents Professor Hardin's independent contribution to the workshop; the views and interpretations expressed in the paper are his own and should not be attributed to the U. S. Department of Agriculture./

Trade is commerce, is intercourse, is exchange, is communication. Trade relies upon a vast network of human relationships, language, media of exchange, markets, an enforceable system of rights and duties, and the organization of power which creates government. In industrial, urbanized societies trade also involves regulation in the interests of the welfare of producers and of distributors as well as in the interest of the health of consumers. Trade has come to include measures to cushion various groups in the economic process from losses that are too sudden and too extreme to be borne, at least by those with power enough to secure protection from government. Even more broadly, trade is involved in public efforts at stabilization of entire economies. Trade has also been enlarged to include activities designed to shift the distribution of goods and services so that special inducements will be offered to some groups and so that special allotments will be made to others according to principles of "welfare economics," or, if you prefer, of justice. Trade has also become an instrument of foreign policy. All these developments over and above the relatively simple institutions required to barter arrowheads for game have necessarily been accompanied by geometric increases in the number and complexity of arrangements by which men live together. On certain of these arrangements this inquiry is focused.

What are trade barriers in fluid milk? Some have been as obvious as the red coloring matter which Rhode Island officials added to certain milk of outraged Vermonters in the 1930's. 1/ But the character of other arrangements is much less apparent. Thus, compensatory payments, discussed later, have recently become significant adjuncts of most federal milk market orders. Some people consider them essential to the success of orderly marketing; others see them as mischievous and (hopefully) illegal restraints upon trade. Any ordinary citizen perplexed by such problems can take some comfort in divisions of the Supreme Court on dairy cases. 2/

In what follows then, readers should keep constantly in mind the real difficulties of interpreting marketing arrangements and of judging them. In general, this paper is not aimed at providing answers in terms of what policy should be--it aims, rather, at some illumination of certain aspects of the marketing system for milk.

1. Limitation to Milk

Informal arrangements and governmental control have long affected agricultural marketing and production. Mercantilism was a monument of regulations heavily bearing upon agriculture, 3/ and contrary to much strongly held belief, government participation in the economy was honored in both deed and doctrine by American states at least until the 1850's. 4/ We are interested in contemporary problems, however; and the Great Depression with its numerous efforts of protectionists is an excellent standing point.

The depression years produced many items of regulation in favor of some agricultural producers and handlers, and against others; with World

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1/ George R. Taylor, Edgar L. Burtis, and Frederick V. Waugh, Barriers to Internal Trade in Farm Products, U. S. Department of Agriculture, March 1939. pp. 10-11.

2/ See e.g., U. S. v. Rock-Royal Coop., Inc., et al. 59 S. Ct. 993, H. P. Hood and Sons v. U. S. 59 S. Ct. 1019 (1939), and H. P. Hood and Sons v. Du Mond 336 U. S. 525 (1949).

3/ Eli F. Hecksher, Mercantilism, 2 Vols. (London: G. Allen & Unwin., Ltd., 1935, transl. by Mendel Shapiro).

4/ Louis Hartz, Economic Policy and Democratic Thought (Cambridge: Harvard University Press, 1948).

War II many such regulatory laws and restrictive arrangements disappeared or went into abeyance. In the current decade some interest is reviving in them. 1/

This discussion will center upon milk. Milk is always an exciting subject for political and economic analysis. The producing, processing, distributing, and policing of dairy products involves intricate interrelationships among farm, business, and labor organizations and between these groups and governments of all levels. Repeatedly a subject of controversy, milk policy is currently enjoying top billing.

The National Grange has just published an important study of barriers to trade in milk; both the other general farm organizations have committees working on similar problems; so does the National Cooperative Milk Producers Federation. The E. W. Gaumnitz Committee, set up by the Secretary of Agriculture, has completed a study of federal marketing orders. Under the leadership of Harry Trelogan and Louis F. Herrmann, a USDA study is directed toward regulations affecting the merchandising and movement of milk. Pursuant to the directive of Congress in the Agricultural Act of 1954, the Department has also recently released a study of alternative methods for controlling farm milk production and supporting prices to farmers for milk and butterfat. The National Research Council's "Sanitary Milk Control and Its Relation to the Sanitary, Nutritive, and Other Qualities of Milk" (the Dahlberg report) is only two years old. A significant regional research project centered upon trade barriers, with considerable emphasis upon dairy products, and organized under the Research and Marketing Act, has produced several publications at the University of Arizona.

This incomplete list may be arbitrarily ended by noting current hearings by a dairy subcommittee of the House of Representatives Committee on Agriculture. These hearings (the first volume of which is cited below) will provide a convenient compendium of many of the foregoing studies, of other studies, and of references to the rapidly growing literature.

What sets off these inquiries? Between 1938-40 and 1954, the United States' population grew 23 percent while milk production increased only 15 percent. But the civilian population consumed 12 percent less milk in all forms of dairy products in 1954 than in 1935-39. Fluid milk consumption per capita increased 13 percent; cheese, 38 percent; and ice cream, 84 percent. But fluid cream consumption dropped 20 percent and

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1/ Taylor, Burtis, and Waugh, op.cit., and see especially the section "Fair Dealing," pp. 254-296, in Marketing, the USDA Yearbook, 1954. See also R. S. Hillman and J. D. Rowell, Barriers to the Interstate Movement of Agricultural Products by Motor Vehicle in the Eleven Western States, Univ. of Ariz., Agr. Expt. Sta., Tuscon; Bulletin 248, June 1953; same authors and V. L. Israelson, Barriers to the Interstate Movement of Milk and Dairy Products in the Eleven Western States; same Expt. Sta., Bulletin 255, April 1954, and literature there cited.

butter took the unkindest cut of all - 47 percent. For butter declined from about 42 percent of total consumption, milk equivalent, in 1935-39 to only 25 percent in 1954. Even so, milk production and consumption was fairly balanced late in 1952; but the decline in beef prices prompted some shifts to dairying, and milk production increased 7.2 percent in 1952-54. From April 1953 through March 1954, the CCC bought 382,000,000 pounds of butter. Milk production continued to increase; meanwhile, the average wholesale price per hundredweight fell from nearly $5.00 to less than $4.00 (1952-54) and, of course, the Class I and blend (or pool) price in federal order markets continued to decline. 1/ In this situation, interested parties were bound to look to institutional controls, political and otherwise, to shove up their markets - or to see to it that others did not fence off an attractive market from them.

For a century milk has been subject to some kind of sanitary regulations that were developed, municipality by municipality, under State police powers. These were developed without benefit of an authoritative model until in 1939 the United States Public Health Service brought out a standard Milk Ordinance and Code (revised in 1953). In 1955 this ordinance was in use in about half the States and cities, but its use was limited in northeastern and far western United States. 2/

Sanitary policing of milk has often been intimately tied up with economic regulation. Often economic control of the market has depended upon cooperation of health department officials operating under health ordinances but limiting the number of inspections that they make so that producers will not be licensed to deliver to particular markets in such numbers that they upset the "economic stability" of the market for producers already licensed.

The emergence of economic regulation has involved action by cooperatives, by trade associations, and by labor unions. Persuasion, economic sanctions, and sometimes violence have been used to bring dissidents, "chiselers," and rugged individualists into line. Thus Chicago was subject to a trade association monopoly during most of 1902-1930, a monopoly which kept store prices on fluid milk the same as prices on home-delivered milk. When this monopoly (or oligopoly) was broken, a spread emerged between store and home-delivered prices; and the proportion of store sales in Chicago rose from 6 percent in 1930 to 70 percent in 1952! Even so, Chicago was the scene of an action under the anti-trust laws in the late 1930's where the amazing interrelatedness of

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1/ House Hearings, Study of the Dairy Industry, 1955, op.cit., various tables.

2/ Dr. A. C. Dahlberg in Hearings, Subcommittee on Dairy Products, Committee on Agriculture, H. of Rep., "Study of the Dairy Industry," Serial M., Part 1, 84th Congress, 1st Session, 1955, p. 288 (henceforth cited as House Hearings), "Study of the Dairy Industry," 1955.

the dairy industry and the consequent complexity of the combinations which sometimes are formed to try to rationalize it are well shown: Indicted were several leading dairies and certain of their officers, the milk drivers union and certain of its officers, the cooperative and certain of its officers, the health officer, the bottle exchange, and a policeman or two. 1/

There followed a consent decree and the promulgation of an order for the market under the Agricultural Marketing Agreement Act of 1937. Under this regime (during a long period of considerable prosperity it may be noted), the Chicago market has, reputedly, been free of entry and yet rationalized to general satisfaction. 2/

More generally, agricultural cooperatives were encouraged by the Clayton Act (1914) and the Capper-Volstead Act (1922), both of which worked to free farm cooperatives from the anti-trust laws unless they conspire with nonfarmers or unless they act unduly to raise prices to consumers. Fluid milk cooperatives began to organize and bargain collectively. But they ran into difficulty by bargaining for flat prices for all milk delivered to handlers; for both the supply and demand of milk fluctuate sufficiently to require a more complicated kind of industrial bargain. Classified milk plans were then introduced, classifying milk according to use and providing a scale of prices accordingly.

Thus, "Grade A" milk for table use, produced and marketed with all the care required by increasingly exacting health regulations, brought the highest price and other classifications of various kinds of manufactured milk brought lower prices with the "residual claimant," butter (highly storable and transportable) being used as a base for the classification of milk and milk products in fluid markets. The next step was to provide pooling arrangements so that all farmers who were members of the bargaining cooperatives would be paid equally, subject to variations which were worked out for quality, location, and (eventually) for evening out delivery between the flush spring months and the lean fall and winter months.

Not all such plans worked as well as these plausible sentences might suggest; but they served a considerable purpose until the Great Depression brought the American economy to its knees. As happened

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1/ U. S. vs. Borden and Co., 308 U. S. 188.

2/ See R. W. Bartlett in Hearings, Special Subcommittee to Investigate the Dairy Industry in the United States, Committee on Agriculture, H. of Rep., 83rd Congress, 1st Session, Part 3, Serial d, (1954). In general, the writer's personal informants agree with this characterization of the Chicago market; but Hugh L. Cook, "Expanding Out-of-State Milk Sales," Special Circ., Wis. Agr. Ext. Serv., Madison, March 1954, takes a dimmer view of the benefits of the Chicago order in its effects upon the surplus manufacturing area, p. 4.

elsewhere in agriculture, dairy farmers turned rapidly and effectively to government for help. In 1933-35, 17 States passed laws which attempted to control wholesale, retail, and producers' prices of milk; eventually 28 States experimented with similar legislation. 1/ Meanwhile, dairy products were provided for in the Agricultural Adjustment Act of 1933 in the agreements and license provisions and a spate of feverish activity, largely unanticipated, took place. 2/ Then in 1937 the Agricultural Marketing Agreements Act was passed for milk and certain other farm products.

In mid-1955, there were no "agreements" for milk under this act, but there were 56 active Federal marketing orders for fluid milk. 3/ These orders are excellent examples of governmental law which crystallizes arrangements that private groups have already developed and provides public sanctions to enforce them. The orders define marketing areas, classify milk sold in such areas according to its use, fix prices for each classification, provide for pooling of receipts and the ascertainment of blend prices so that farmer-producers will be paid equally (except for the regularized kinds of differentials already noted), and provide for a market administrator who (a) is a Federal official, (b) sees to it that producers get the minimum prices to which they are entitled under the order, but (c) is paid and has the expenses of his office defrayed by check-offs from the handlers. 4/ (This indeed is surely an interest group's dream: to have the majesty of government at one's command and the expense of the regulation that it maintains borne by one's economic "adversary." The handlers, however, have generally come to accept the arrangements.

Let us now examine, quite impressionistically, Federal marketing orders, State regulation, municipal control, and the rationalization of markets by private groups. Under these headings, the significance of group politics, of sanitary inspection, and of judicial decisions can be discussed.

2. Federal Marketing Orders

The 56 Federal orders for milk (mid-1955) cover much of the industrial Northeast and Midwest and spread a fairly solid band of regulation from Michigan and Wisconsin, through Illinois and Missouri, and well into Texas. In addition, certain counties in Iowa, in South Dakota, in

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1/ A special report by the National Grange, "Barriers to Increased Consumption in Fluid Milk," Washington, D. C., January 1955, p. 81.

2/ John D. Black, The Dairy Industry and the AAA (Washington, D. C., Brookings, 1935).

3/ A 57th was not yet in operation.

4/ "The expenses of (the market administrator's) office are met by an assessment on handlers." Testimony of Mr. Forest, op.cit., p. 65.

Washington, and in Louisiana and Mississippi are under Federal orders (House Hearings, Study of the Dairy Industry, 1955, p. 258; see this source for several other maps showing both Federal orders and also State milk control). Striking omissions are Southeastern States and Western States - the most notable of the latter being California where State control is important. Of approximately 2,000,000 commercial dairy farms in the United States, 186,000 were producers in federally-regulated markets during 1954 and they delivered over 27,000,000 pounds of milk; so about 9 percent of the producers delivered 22 percent of the total milk production of the country in Federal order markets. 1/

In addition to the characteristics already noted, the following aspects of Federal orders are significant. The orders are administrative regulations, promulgated by the Secretary of Agriculture, but having the force of law. Disaffected handlers or others who must obey the orders are provided by the Act of 1937 with administrative appeals to a judicial officer in the USDA whose decisions (which are very much like those of a court of original jurisdiction) are reported, along with similar decisions under appeals provisions of the Packers and Stockyards Act and the Commodity Exchange Act in Agriculture Decisions. In turn, these quasi-judicial decisions can be appealed to the Federal courts, eventually to the Supreme Court, if it will grant certiorari (Mr. Thomas Flavin, the judicial officer, has collected relevant court decisions in various issues of Agriculture Decisions.). As delegated legislation, Federal marketing orders have been sustained by the Supreme Court (see U. S. vs. Rock-Royal Cooperative, Inc. and U. S. vs. H. P. Hood and Sons, already cited). The courts have upheld the Secretary's rule making authority in the most sweeping terms. They have also approved the application of the Federal power over interstate commerce by means of milk market orders even though, as in Columbus, Ohio, less than one percent of the milk regulated by the order crossed State lines (Balazs vs. Brannan, 87 F. Supp. 119, 1950; cf., respecting Wichita, Kansas, Beatrice Creamery Co. vs. Anderson 75 Fed. Supp. 363, 1948). One of the best ways to get a grasp of the complexities of some of the Federal orders, the constant clash of interests involved in them, and the steady stream of litigation that they engender is to spend a day with the fat volumes of Agriculture Decisions.

Of the 56 operating Federal orders, 40 divided milk into only two classes in April 1955: Class I, fluid use, and Class II, all other.

1/ According to the National Grange, 50-60 percent of the milk sold for fluid use in 1953 was priced by Federal or State milk control.

Eleven established three classes. Four established four classes (New York 1/, Milwaukee, Chicago, and Cincinnati); and Cleveland had five classes. The class schedule has been based upon manufactured milk--in the Midwest the weighted average price at 18 condenseries (on the general ground that in this surplus producing area the highly storable and transportable evaporated milk market "makes a price" for other milk in that farmers would not ordinarily take less than they could get from evaporated milk plants to sell in fluid markets). In Boston and some other northeastern markets, an economic index has been used (the pro's and con's of such indices are much discussed in the 1955 hearings already noted and in other literature mentioned in this paper).

Federal marketing orders can be either market-wide pools (as 42 were in April 1955) or individual handler pools (14 as of the same date). Discussion in this paper is confined essentially to market-wide pools which prevail in most of the major markets under regulation. In such markets monthly accounts are kept by the market administrators. The entire utilization of milk in the market for the month is ascertained by classes. The weights of milk in each class are multiplied by the price for that class and totaled; and the result, divided by 100, gives the blend price per hundredweight of milk. This is the price that the farmer receives, subject to differentials for quality, for location, and, in some 16 market-wide pools, for maintaining base excess plans designed to even out milk production between the spring flush and the fall shortage. Any handler whose total milk sales happen to divide among the classes in exactly the same way that all the market sales do in a given month simply accounts to the administrator and pays his producers. If a handler has more Class I sales than the average, however, he pays the proper differential into the "producer settlement fund"; if he has less than the average, he gets paid from the same fund.

The foregoing, highly oversimplified, would probably command general agreement. Now comes the controversial part. Responsible USDA officials are firm in denying that Federal orders regulate production or in any manner limit the entrance of producers into a market. A distinction is made between defining a production milk shed, which orders do not do, and defining a marketing area wherein all handlers competing with each other are subject to regulation. The theory is that Federal orders contain no barriers to trade in fluid milk; they only insure that producers selling milk subject to Federal orders shall be paid equally, subject to regularized differentials already noted.

1/ The classification section of the New York Order (§927.37) described five classes. Identical prices are established for two of these. But special pricing provisions apply to milk used for butter and cheese under specified circumstances (§927.43). Thus the number of separately priced uses may be four, five, or six. Similar variations are found in a number of other orders.

In one sense this position is sound. In another sense, it may be inaccurate because it does not take in consideration the fact that Federal orders are only parts of more general market controls in which sometimes State, municipal, and private controls have a share. This fact was demonstrated in the major cases of U. S. vs. H. P. Hood and Sons (307 U. S. 588, 1939) where the court held that the Secretary of Agriculture properly refused to grant the vote on the Boston order to producers who could not send their milk into the order area because the handlers with whom they dealt were not licensed under Massachusetts statutes to sell milk in the area. And in 1949 a Federal Court of Appeals upheld the Secretary of Agriculture in applying the New York City order to a handler who received milk in Pennsylvania and shipped it into the New York metropolitan marketing area. The handler in question was approved by the New York Health Department; this fact was what made him a handler subject to the New York order. He could terminate such approval at will, but while he maintained it, he was subject to the order. (Titusville Dairy Products vs. Brannan, 176 F. 2d. 332, certiorari denied, 388 U. S. 905)

The Federal rebuttal will be that any farmer who qualifies can get under any Federal market order, and this statement is entirely correct so far as the USDA is concerned. But it may be of little assistance to producers who cannot get inspected by authorized local health authorities in a Federal market or who do not have as an outlet a handler who is qualified under the order. The question is: Do the State and local sanitary regulations limit the Federal markets? The current hearings of the Dairy Subcommittee of the House Committee on Agriculture will contain many assertions that they do (see e.g., the statement by C. M. DeGolier, June 2, 1955, not yet published, as well as the testimony of Dr. Dahlberg in the first volume of hearings, cited above). As Mr. Herbert Forest, who administers the Federal marketing order program, told Congressmen on April 20, 1955: "...We do not have a thing to do with sanitary requirements. We use that only as a definition of what milk will be regulated but the actual ... regulations will be fixed by... either city or State health authorities." (House Hearings, Study of the Dairy Industry, 1955, op.cit. p. 75) Later, Congressman Laird (R., Wisconsin) said:

> "You are talking about the New York plant. Well, if you talk about the Federal order, you here would have to go behind that Federal order and look at the other restrictions, the other restrictive measures which have been drawn up around the New York market which have nothing to do with the Federal order. These barriers are superimposed upon the local New York market, but the Federal order was placed upon the New York marketing area knowing that these local restrictions existed and there was nothing that you could do to correct these restrictions."

To this, Mr. Forest replied, "Yes, sir." (Same source, p. 88.)

This is where *compensatory payments*, already mentioned, come in, as well as provisions for *allocation of classification*, which have much the same effect. The latter regulation has been applied to the St. Louis market, among others. That order provided that 95 percent of local producers' milk had to be allocated to Class I prior to the allocation of imported or ungraded milk. That is, if milk from outside the ordinary marketing area in St. Louis were brought in, it would be paid for from the pool at the lowest classification, regardless of the class in which it was used. This provision of the St. Louis order was upheld in Bailey Farm Dairy Co. vs. Jones (61 F. Supp. 209; affirmed 157 F. 2d 87; cert. denied 329 U. S. 788). The District Court considered the charge that the provision violated the Andresen Amendment to the Act of 1937, which states that Federal orders shall contain no provisions which

> "...shall prohibit or in any manner limit in the case of products of milk, the marketing in that area of any milk or products thereof produced in any production area in the United States."

Coming from Minnesota, a surplus production area, Congressman Andresen was as anxious to clear the way for the movement of milk and dairy products generally as he has been zealous to prevent and encumber the marketing of colored margarine. In the Bailey Farm Dairy Case, the District Court construed the amendment to prevent the prohibition of the movement of fluid milk, but it pointed out that such movement was *not* prohibited, though it *was* limited; the Court also concluded that the St. Louis order did not limit importation of milk products as the amendment prescribes.

Like allocation of classification, *compensatory payments* are used to regulate the importation of milk that does not ordinarily come into a Federal order market. In general, such payments provide that the imported milk shall be paid for at the lowest class price under the order and that the importing handler shall pay into the pool the difference between this price and whatever he receives for the milk. Thus, the effect is the same as allocation of classification. The rationale is that, so far as the Federal order administration is concerned, any handler who can qualify and who wants to come under the Federal order as a regular supplier who will ship milk in the short season as well as in the flush season can do so on the same basis as any other handler. But handlers who do not want to accept regulation by the market or who have milk supplies which are not subject to continuous regulation of the market must not expect to "ride the pool," as the saying is--coming in when they can get a little higher price for their milk via the pool and staying out when they can do a little better elsewhere. Behind this rationale is the more fundamental one, already noted, that both supply and demand of fluid milk fluctuate; that fitting the two together requires numerous arrangements as well as some risks and acceptance of losses by those regularly in the market; and that those outside the market shall not be provided a free ride at the expense of those within it. Any resemblances to labor union arguments for the union shop and union security provisions are *not* merely coincidental.

in the Rochester area in recent years. 1/ That these restrictive actions have not been confined to Rochester is suggested by the refusal of Mr. Du Mond, then New York Commissioner of Agriculture, to grant H. P. Hood and Sons an additional license for a plant near Troy, New York, for receiving and shipping milk into Massachusetts. By taking an appeal to the Supreme Court, Hood eventually won; but presumably this action did not strike down the New York law; it only permitted Hood to have the extra license. 2/

The situation thus described helps explain Professor Stewart Johnson's remark that some markets maintain Class I prices so high that overproduction is stimulated and the dairy farmers eventually suffer through a lower blend price. "I am thinking," he said, "not so much of the Federal order markets as I am of some State markets, Buffalo and Rochester, New York, for example." 3/ There is some belief that the New York licensing provisions are so rigorously exercised throughout the State that a situation has arisen among handlers in which an inside group "lives and lets live" without indulging in the "destructive competition" which the New York law seeks to proscribe or, apparently, in very much constructive competition either. Virtually the only way that one can get a New York license, it has been told the writer, is to buy one.

Thus we have a picture of New York as a pattern of State restraints which introduces considerable "imperfections" in the national milk market. This picture is flanked by others showing somewhat similar patterns of State control in other deficit markets neighboring New York. 4/ The interpretation seems consistent with the role of the Federal order program in New York, especially with the compensatory payments, introduced in the 1945 amendments, and also with the schedule of prices, particularly, the Class I price. According to this interpretation, pressure may be expected on the Federal order to increase the Class I price and thus raise the blend price, even though more surplus production may thus be stimulated; and this happened recently. Early in 1955 Federal hearings on amendments to the New York City order were suddenly terminated by the USDA

1/ The Dahlberg Report, p. 25.

2/ H. P. Hood and Sons, Inc. vs. Du Mond 336 U. S. 525 (1949); this was a 5-4 decision; four justices of the Supreme Court thought that the majority had arbitrarily interfered with the reasonable exercise of State police power.

3/ House Hearings, 1955, op.cit. p. 240.

4/ See Professor Johnson on Connecticut, op.cit., p. 238 and the discussions of State control in Pennsylvania, New Jersey, and Rhode Island in the National Grange's report, op.cit., Chapters V and VI.

Compensatory payments in the New York order have been adjudicated once, most inconclusively (those in the Cleveland and Oklahoma orders were in the courts in 1955). The Circuit Court of Appeals for New York in a two-to-one decision struck down the provisions in the New York order for compensatory payments so far as cream and condensed milk are concerned. But the decision seemed to approve the principle of compensatory payments and apparently objected only to certain features of these particular payments which the court deemed arbitrary. The Department of Agriculture does not consider that this decision, the "Babylon Case," prescribes the use of such payments (Kass vs. Brannan 196 F. 2d. 791; cert. denied by 344 U. S. 891).

Herbert L. Forest, Director of the Dairy Division, Agricultural Marketing Service, USDA, explained compensatory payments to Congressmen and defended them against the charge that they were used to exclude milk from Federal markets or to limit access of milk to such markets. "We would object to it and it would be contrary to the provisions of our Act to exclude milk from a manufacturing area." He also denied that the Secretary of Agriculture granted price increases on the grounds that producers needed higher prices, saying that such increases were granted only on evidence that the milk supply in a market was declining relevant to some normal base period. He asserted that the USDA would not use compensatory price provisions to protect a price structure which was "out of line." In making these statements, he may well have been thinking of the recent run-in with State authorities in New York (See below, p.151). Clarence H. Girard, Chief, Marketing Division, Office of the USDA's General Counsel (formerly Solicitor), stoutly defended the use of compensatory payments, although, like Forest, he was firm in maintaining that Federal orders do not regulate production areas. 1/

Others have endorsed compensatory payments. All but three members of the Gaumnitz Committee (already cited) approved them. In addition, Kenneth Hood, Assistant Secretary of the American Farm Bureau Federation, implied acceptance of compensatory payments by citing the orthodox rationale in their defense, but added that whether such payments represent barriers to trade "is debatable." Professor Stewart Johnson of the University of Connecticut argued that such provisions are an essential part of market-wide pools under Federal orders if "free entry into a market is to be had." J. P. Mason, Director of Economics of the National Cooperative Milk Producers Federation, also approved compensatory payments. 2/

The National Grange, however, was noncommittal, 3/ and a number of experts, some of whom like some of the proponents of compensatory

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1/ House Hearings, Study of the Dairy Industry, 1955, op.cit., pp. 64-66, 69, 72-73, 75-76.

2/ Ibid., pp. 188, 192, 216, 273.

3/ "Barriers to Increased Consumption of Fluid Milk," op.cit., pp. 110-112.

payments are more or less interested parties, were vehemently opposed.

Thus Otie M. Reed, former Administrator of the Dairy Division (1939-42) and now Washington representative of the Joint Committee of the National Creameries Association and the American Butter Institute, was spokesman for the minority of the Gaumnitz Committee. Reed declared that "Compensatory payments operate to limit the movement of qualified milk into fluid milk markets operating under orders and tend to implement a high degree of local monopoly." He quoted the USDA's decision to approve amendments to the New York order in 1945 providing for such payments in order to "limit the pool..." Compensatory payments, he argued, make possible arbitrarily high prices for fluid milk which results in larger-than-necessary surpluses in such markets. Among other evidence, he cited on April 1955, statement of Professor Leland Spencer of Cornell:

> "In 1954 the supplies of approved milk exceeded the sales of fluid milk and cream by 81 percent in the New York milkshed, 78 percent in the Rochester milkshed and 74 percent in the Niagara Frontier (Buffalo) milkshed. About 50 percent excess over fluid sales in New York and 39 percent in Rochester would be sufficient to allow for seasonal changes and other fluctuations in production and consumption and to insure an adequate supply at all times." 1/

The writer is not prepared to pass judgment respecting whether the limitations which Federal orders impose (and help impose) on the trade are beneficial or harmful. In the recent and current situation of rising production and falling prices, one would expect those in surplus areas to be the most vehement objectors. Thus the North Central States, with nearly 58 percent of the milk production in 1950 and less than 30 percent of the population naturally produce the spokesmen who look with greatest suspicion upon Federal orders and other devices which may be used to protect the dairy industry in deficit areas. Congressman Andresen (R., Minnesota) has a bill (H. R. 1754, 84th Cong., 1st Session) which, he hopes, will do what his amendment to the 1937 act failed to do--"...remove those barriers to the free movement of milk and milk products in interstate commerce which now exist because of marketing agreements and orders under Act, and because of various State and local sanitation requirements." Men interviewed by the writer seem to think that Andresen's bill is sweeping enough to threaten the entire Federal order program with destruction. But none of these interviewees came from Minnesota, and people there might echo the sentiments of Andresen and Editor W. A. Gordon of the Dairy Record.

Mr. Gordon's position 2/ is reminiscent of the early New Deal when opposition of the National Association of Local Creameries helped block

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1/ Statement by Mr. Reed will be published in a subsequent volume of the Hearings, "Study of the Dairy Industry," 1955, op.cit.

2/ See the National Grange, "Barriers to Increased Consumption of Fluid Milk," op.cit., p. 110, footnote 9.

a national marketing plan for milk. 1/ Then, as now, friction between butter interests and manufacturing interests on the one hand and fluid milk interests on the other was considerable. With the exception of certain interests in the Minnesota and Wisconsin flush production area, however, Federal orders seem generally popular. They are popular with fluid milk cooperatives, not only because they regularize the market but also because the order provides the officers, who are, after all, the spokesmen for cooperatives, with power to vote their membership (if cooperatives are bona fide, that is: Efforts by dealers to set up dummy cooperatives have been unsuccessful). At first there was some indication that cooperative officers, who not only could vote in an order 2/ but who could petition for a new vote and defeat it at any time, would have the whip hand over the USDA, 3/ but the USDA established the principle that cooperative leaders would have to vote in favor of the entire order--or the entire set of amendments to it--or none. This "countervailing action" redressed the balance.

Handlers also have some reasons to like the orders. If a handler is large enough to have to deal with the major producers' cooperative in the market, he may well prefer that his smaller competitors, who might otherwise bid producers' milk away from him by paying them a little higher than the pool price while still selling fluid milk for a little less than the Class I price, are, under the orders, forced to account to the pool and to pay producers the blend price, subject to differentials, as noted. At the same time, handlers in the Washington, D. C., market have apparently been influenced by proposals of the Virginia and Maryland Milk Producers Association to request a favorable order to grant concessions to the cooperative in order to prevent its carrying out its intention. 4/

1/ John D. Black, The Dairy Industry and the AAA, op.cit.

2/ In theory, an affirmative referendum is only necessary for the Secretary to promulgate an order: whether to do so still lies in his discretion. (This theory bows to the doctrine on delegation of legislative powers laid down by the court in the 1930's.)

3/ Producers must approve market-wide handler pools by two-thirds of those voting or three-fourths for individual handler pools. Since the Dairymen's League in New York has some 26,000 members, or about half the total producers in the New York order, and the Pure Milk Association in Chicago with some 16,000 members has about the same percentage of the total. The officers of these cooperatives clearly are the arbiters of the existence or continuation of their respective orders.

4/ See also for Rhode Island, The National Grange's report, op.cit., p. 73, for a statement imputing the reluctance of R. I. dealers to have a Federal order to their desire not to open their books for inspection.

In Boston, H. P. Hood and Sons challenged the original order and similar opposition elsewhere was widely apparent. These different positions may be explained by urging that major handlers are inclined to prefer any system that makes an orderly market. If this end can be obtained without a Federal order, handlers would prefer not to pay the check-off to support the Federal milk administration. But once they have an order and it becomes an integral part of the system regulating the market, they apparently prefer to maintain it.

As the Grange concluded, under such orders, "markets are neither widely open nor tightly closed." Probably the Grange is right that sanitary regulations apparently pose a greater problem. But the real significance of Federal orders as restrictive devices inheres in their relationship to other parts of market regulatory systems. Emphasis since World War II upon allocation of classification and compensatory payments strongly suggests that Federal orders are part of such more general schemes--in which State and local regulations and private group action are likely participants. The writer is somewhat suspicious of compensatory payments without being prepared on his present understanding of them to recommend their nullification. But one thing should be crystal clear. If Federal orders are integral and essential parts of control schemes which unduly burden trade, the remedy should not be left up to the Dairy Division and the milk market administrators. So far as the writer can discover, the Division and the market administrators, throughout their history, have maintained the respect of virtually all the industry for integrity and effectiveness. As a review of the experience of Mr. Nicholas Cladakis in the New York market just before World War II would show, even a most vigorous Federal milk administrator cannot cut many strands of the maze of agreements, conventions, and regulations which hold a highly complex market together without bringing enough of the structure down on his head to crush him. If, to repeat, there is a major problem to be corrected, it cannot be left to one or two Federal officials--it has to be the subject of a major political effort. 1/

In the opinion of some, that political effort may be forthcoming as the result of certain economic developments--especially in the rapidly increasing ability to move milk around. Bulk tanks on farms, farm cooling of milk, milk pickups direct from farm tanks by tank trucks,

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1/ This statement implies some criticism of the reliance upon "administration" to iron out major problems in regulatory schemes such as those for milk. Before administration can be called upon to exercise its discretion, major political settlements must be made - or else major shifts in political power, such as those occurring nationally in 1920 and 1932, must take place.

and improved roads -- the consequence of all these is the ability to move cooled milk of a quality which satisfies rigid sanitary requirements over hundreds of miles. Given these technological changes and the rising curve of milk production, neither compensatory payments in Federal orders nor the various restrictive devices in State laws may long withstand the operation of economic forces.

3. State Milk Control

In the generic sense, according to legal theory, State milk control covers municipal regulation as well, for the State is the source of municipal authority. Nevertheless, acting under enabling State legislation, many municipalities have sought to build walls around their local markets in favor of their own dairymen or handlers. The National Grange's "Barriers to Increased Consumption of Fluid Milk" says that "a tremendous mass of dairy legislation has been enacted by States, counties, cities, and towns" to protect the public against impure milk. Noting that such laws are supplemented by many administrative regulations, the report adds that the original purposes have often been augmented, among others, by purposes of stabilizing the market. Trade barriers have often resulted. 1/ Professor R. W. Bartlett, University of Illinois, has been somewhat more emphatic: "I would say," he declared in 1953 with reference to local markets for milk, "that three-fourths of the cities and villages in the United States have trade association or legalized monopolies today." 2/

Many criticisms of sanitary regulations are noted in the next section in connection with Washington, D. C., a notorious example. Many cities and States have compelled outside farms to be inspected by their own authorities, refusing to make reciprocal agreements; often they have refused or endlessly delayed making the inspection which would permit farms to qualify. Duplicate inspections have harrassed farmers and plants. Sometimes city codes for milk sanitation have had conflicting requirements so that farmers qualifying for one would not qualify for another. According to the Dahlberg report many sanitary codes are needlessly detailed. And yet, incredible as it may seem, the National Research Council's recent study of milk legislation showed that only two States required all fluid milk to be pasteurized. Ten States had

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1/ Ibid., p. 60. This chapter draws heavily upon the Grange's excellent and well-written report, especially Chapters V and VI.

2/ House Hearings, "Dairy Industry," 1953, op.cit. p. 446. As the context makes clear, Dr. Bartlett did not mean that all these restricted municipal markets were the consequence only of local regulation; State milk control laws figure in many of them.

no law on cream sanitation. Of 87 cities, 24 had no ice cream ordinance. 1/ Anyone who believes in the inevitable purity of all dairy products moving in interstate commerce and who has a strong stomach should read the dissents in Cloverleaf Butter Co. vs. Patterson (62 S. Ct. 491 (1942)).

Municipal ordinances which, under the guise of sanitary regulation, tend to restrict trade in fluid milk are having a rough time in the courts. A recent survey says that since mid-1949, there have been some 35 court actions involving either States or municipalities in 17 States or the District of Columbia. Eleven cases involved the refusal of the municipality to inspect plants and farms outside the usual area. Thirteen cases involved city ordinances requiring milk to be pasteurized within a certain distance of the city. The most famous of these decisions was Dean Milk Co. vs. Madison (340 U. S. 349) in 1951 wherein was nullified an ordinance requiring milk to be pasteurized within 25 miles of the city hall. Without detailing other causes for action, it may be noted that nearly all the cases were decided in favor of the complaining companies and against the restrictive ordinances. 2/

Continuation of court decisions may further loosen barriers imposed in the guise of sanitary regulations. Meanwhile, more drastic alternatives are offered. Congressman Andresen's bill (H. R. 1754, 84th Con., 1st Sess.) would prescribe the U. S. Public Health standards for all milk and milk products moving in interstate commerce; but enforcement provisions are extremely sketchy: each State's "chief agricultural officer" is supposed to certify to the U. S. Secretary of Agriculture that dairy products produced in his State and moving into interstate commerce have been handled in compliance with the relevant Federal ordinances. But no sanctions are provided, no procedure set up, no penalties laid down. Moreover, Dr. Dahlberg has argued against the imposition of national standards on the two grounds, first, that technology is rapidly changing in the industry and it would be unfortunate to freeze present technological procedures into a standard and, second, that regional and local variations, e.g., in climate, suggest the necessity of considerable local adaptation of sanitary codes. 3/

Messrs. Hillman, Rowell, and Israelson have suggested that it may be possible to eliminate inspections of dairy farms and concentrate upon plants. After all, the end in view is clean, pure, uncontaminated milk and milk products for consumers; and there is considerable sentiment

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1/ See the National Grange Report, op.cit., p. 70-71 and f.n. The study referred to is different from the Dahlberg report, a detailed survey of dairy farm and plant sanitary inspection in eight cities.

2/ Testimony of Mr. C. M. De Golier, op. cit.

3/ House Hearings, Study of the Dairy Industry, 1955, op. cit., pp. 294-5.

that this end can be best insured by vigorous inspection at the plant rather than on the farm. 1/ The Dahlberg report and Dr. Dahlberg's recent testimony do not support this proposal. "This study clearly emphasized," said Dr. Dahlberg, "that both farm inspection and milk testing were essential." But his testimony did stress the importance of "rigid enforcement of the limited number of factors essential to sanitary milk production." And, beyond this, he implied that a division of labor could well be worked out between the public authority and the handler (whose interest, after all, is crucially affected by his reputation for having sanitary milk). Twice yearly inspection of dairy farms was recommended; but milk samples at the plant should be analyzed twice monthly. While health departments can appropriately check upon the existence of proper facilities on farms, "it is easier for the milk company to test and check the quality of the milk and then do the follow-up work with milk producers." 2/

If the implications of this statement could be put into practice, sanitary regulations could probably be confined largely to their original purpose of insuring clean, pure milk to consumers.

Turn now to maximum and minimum price controls for milk. According to the National Grange, 28 States have at some time experimented with statutory control of milk prices. In April 1954 New Hampshire, Vermont, Pennsylvania, Virginia, and Alabama had authority to fix minimum and maximum prices for milk; Oregon should probably be in the same list, but its law was repealed by a referendum in the election of November 1954. Rhode Island, Georgia, Florida, and California had authority to fix minimum prices at producer and resale levels; New Jersey also had the authority, but is not in the list of States exercising it in April 1955. North Carolina, New York, Massachusetts, and Connecticut had authority to fix minimum prices at producer levels. 3/

The National Grange reported virtually universal satisfaction with the principle, and with much of the practice, in fixing producers' fluid milk prices. One handler interviewed by the writer argued that many dairy farmers do not have feasible alternatives and that they lack a choice even among outlets for the sale of their milk, which must be disposed of promptly and regularly; he also argued in favor of requiring handlers to pay farmers equal prices, subject to the regularized

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1/ "Barriers to the Interstate Movement of Milk and Dairy Products in the Eleven Western States," op.cit., p. 68.

2/ House Hearings, "Study of the Dairy Industry," 1955, op.cit. pp. 289-90.

3/ See the map in House Hearings, "Study of the Dairy Industry," 1955, op.cit., p. 1955 and list of States on p. 62; see also the Grange Report, op.cit. Ch. VI.

differentials already noted; then handlers could compete among themselves for consumers' trade. These and similar points were also recorded by the Grange. But price competition among handlers virtually ceases in those States with complete milk price control. Thus seven States, at the time of the Grange report, permitted no differential between store prices and home delivery and three States allowed a differential of only one or one and one-half cents; in Virginia and Pennsylvania even this differential was limited to only certain markets. In a perennially controversial industry, the Grange concluded that such provisions present the most bitterly contested issues.

In every State with such resale price fixing, according to Grange documentation, opposition has been recurrent and vehement. As noted, Oregon's law was recently voted out and attacks upon similar laws in other States recur. Where laws are enforced, or attempts are made to enforce them, violations are rife. Yet arguments are made that resale price fixing helps stabilize the market and prevent monopoly, but the Grange report finds to the contrary on both points. 1/ There are, however, learned arguments which take exception to the general condemnation of resale price fixing. 2/

Vexatious as resale price fixing may be except to the "insiders, there is some reason to believe that the greatest problem of State controls centers in New York, a State which regulates producer prices only, but as already indicated, such control would be mistakenly interpreted if it were thought of as only State regulation to the exclusion of the role played both by the Federal marketing order program and by private groups. The Northeast, including Pennsylvania and New Jersey and points north and east, had over 26 percent of the nation's population in 1950 and produced less than 17 percent of its milk. The Northeast is the main potential market for the flush production areas of the northwestern Midwest. But the Northeast is the seat of several networks of formal and informal controls which tend to shore up and protect local markets for local producing and distributing interests. As already indicated, none of the nine Northeastern States have followed the U. S. Public Health Service recommendations respecting sanitary requirement for milk; as also indicated, every Northeastern State has statute laws authorizing State regulation of minimum producer prices or of both producer and retailer prices (and,apparently, in mid-1955 all but New Jersey were exercising their authority).

Midwestern dairy groups would like freer access to northeastern markets. They claim that the rise in the percentage of U. S. milk production in the Northeast since 1945 has resulted from an arbitrary price structure

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1/ Op.cit., Ch. VI.

2/ R. G. Bressler, Jr., and D. A. Clarke, Jr., 'Resale Price Control--Outmoded and Anti-Social?" JFE, May 1955.

which jacks up Class I prices and thus stimulates a flow of milk which results in a larger surplus production than is economic for the area. In consequence, they say, the producers suffer: the difference between the Class I price and the blend price is very great in New York and this difference penalizes producers. 1/

The rebuttal is that on the basis of experience, milk flows around in this country as needed. Mr. Herbert Forest presented a national chart, showing the country divided into zones centering on the Midwest. Findings were that the main difference between prices in the Midwest and in the Northeast was explained by transportation rates--in short, the evidence that he presented suggests that, so far as the structure of Class I prices is concerned, the national milk market seems to be organized in accordance with the principle of comparative advantage. If more milk has been produced recently in the Northeast, presumedly it is economically advantageous to do so. 2/

The counter-rebuttal still maintains that the surplus is uneconomically large in New York and that the spread between the New York Class I price and the blend price is inordinately wide. To the argument that figures indicate that it is ordinarily uneconomical to ship milk from surplus areas into the northeastern markets, the counter-rebuttal says: no one is talking about shipping milk directly from Shawano, Wisconsin, to Boston; but what should take place is an extension of Boston's milk shed into New York, New York's into Pennsylvania, Pennsylvania cities' into Ohio, Ohio's into Indiana and Michigan, and so on, with a general pushing out westward of such boundaries.

This is where New York State milk control comes in. Under this law the State Commissioner of Agriculture controls the inspection of additional dairy farms as suppliers of the fluid market according to whether the supply of milk from such farms is needed in the market. Since World War II, the Commissioner has followed a policy of denying additional inspections for Rochester, New York, and presumably for other New York cities. The commissioner exercises similar authority in licensing milk dealers according to whether additional dealers would cause destructive competition. Again, the Commissioner has granted few new dealer licenses

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1/ House Hearings, Study of the Dairy Industry, 1955; see table on p.146 for the proportions of milk produced by regions. The 15.9 percent of the national total produced in the Northeast fell to 15.8 percent in 1940 and 15.6 percent in 1945; in 1950 it was 16.9 and in 1954, 17.2. See also p. 43 for the blend and Class I prices in federally regulated markets; here the difference between the New York Class I and the New York blend is greater in 1954 than that in any other market. Respecting the size of the surplus in New York, the weighty criticism of Professor Leland Spencer has already been quoted. See also Professor Bartlett's testimony in House Hearings, "The Dairy Industry," 1953 op.cit.

2/ 1955 Hearings, op.cit., pp. 43-44 and passim.

on the grounds that the new Democratic State administration had confused the record--apparently by vigorously advancing producer interests. The State of New York's representative came out for increasing the fluid price to $6.00 per hundredweight, subject only to variation because of seasonal production factors. The February 1955 price was $5.29; economists figured that the increase would raise the price of milk to consumers two cents a quart. The USDA's representative said that the State's testimony had prejudged the hearings because the State and Federal orders are administered jointly. 1/

This example illustrates the interlocking of controls and the pressures on the Federal order program; it also injects a note of partisan politics that has been generally absent from the administration of Federal and apparently from State milk marketing orders. The incredible part of the partisan politics to the present writer is that the Democratic administration should propose a two-cent increase in the price of fluid milk. This proposal was made in the face of evidence that the New York rural population (mainly dairy farmers) voted overwhelmingly for Senator Ives in the gubernatorial race in 1954 and that, as usual, the Democratic strength lay in the urban areas which would suffer from the two-cent increase that, in turn, would probably help dairy farmers very little. The only readily apparent explanation of this paradox is to attribute it to the hypnotic spell that the idea of high farm price supports seems to hold for many ranking Democrats.

4. Milk for Washington, D. C. - Insiders vs. Outsiders

During 1925 - 1942 milk from outside the Washington milk shed was barred from the District of Columbia. The Washington milkshed was defined to include those farms inspected by District health inspectors. "Outside milk," is Grade A and from a farm approved by some State health officer, but not by the District's own employee. Wartime demand caused removal of the ban, but the commissioners of the District voted to reinstate the proscription as of July 1, 1950. 2/ Immediate protests came from Congress and others representing western dairy interests--the influential Pioneer-Press (St. Paul) had published a series of editorials by Alfred D. Stedman pointing to July 1 as dairymen's "D-Day" because then the half-century old punitive Federal tax upon colored margarine would expire and the large D. C. market would also be walled off from western milk. 3/ Congressman Miller (R., Nebr.) introduced a bill to liberalize the Copeland Act's ban on milk from farms approved by other than District of Columbia inspectors. Senator Wiley (R., Wis.) told the D. C. Commissioners that if they persisted in refusing to permit outside milk, "Congress will do it for you." The commissioners had acted on advice of counsel

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1/ New York Times, February 13, 1955.

2/ The late John W. Ball in the Washington Post for July 1, 1950; the following is essentially drawn from a series of Washington Post articles in July-November 1950, and a few articles in subsequent years.

3/ St. Paul Pioneer Press, May 14-18, 1950; June 24, 1950.

that they had no legal alternative except to re-impose the ban; nevertheless, they suspended its re-instatement for two months and announced hearings on July 10 on the question of amending the Copeland Act.

At the hearing were some 700 raucous advocates, instead of the anticipated 200. The "excess" or "over-run" had been recruited by the Maryland-Virginia Milk Producers Association and they "wildly applauded every witness" favorable to producers, "booed and jeered every witness who urged changes in present inspection laws," and, finally, insisted that the meeting end by 4:30 "as one said, 'so we can go home to do our milking.'" 1/

A salient matter of controversy was whether sterilization of dairy utensils by chemicals as well as by steam would be permitted. The connection between this controversy and the squabble over the qualification of other than nearby milk producers to sell fluid milk in the District was as follows: Under the law, the Washington Health Department provided premiums up to 43 cents a hundredweight according as the farmer complied with the most detailed list of sanitary regulations of any city studied by the National Research Council's Committee on Milk Production, Distribution, and Quality. Compliance required heavy equipment investment, many items of which the committee considered "not essential even though they may be conducive to good sanitary practices." 2/ The Washington Post editorialized that the "1700 farmer-members of the Maryland-Virginia Milk Producers Association" who furnished about 85 percent of the District's milk "had a vested interest in keeping the steam requirements" even though chemical sterilization had been approved by the U. S. Public Health Service and was used extensively elsewhere. 3/

The District Commissioners' hearing continued a second, and somewhat quieter day, although still well-packed by cooperative members. Only one witness touched on any item other than steam vs. chemical sterilization of utensils--each witness repeating what had gone before until the recitation "sounded like a stuck record." Someone enlivened the proceedings by asserting that it was necessary "to have two privies--one to meet the requirements of Maryland inspectors, and one to meet those of Virginia." 4/ The inconclusive end of these hearings merely raised

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1/ John W. Ball in the Washington Post, July 11, 1950.

2/ A. C. Dahlberg, H. S. Adams, and M. E. Held, "Sanitary Milk Control and Its Relation to the Sanitary, Nutritive, and Other Qualities of Milk," publ. No. 250, National Academy of Sciences, National Research Council, Washington, D. C., 1953, p. 99 (The Dahlberg Report).

3/ July 10, 1950.

4/ Washington Post, July 11 and 12, 1950.

the curtain on the next act--hearings before the House District Committee on bills by Congressmen Murray (R., Wis.) and Miller (R., Nebr.) to "modernize the district milk law." Also, in the wings was Senator Gillette (D., Iowa) with a subcommittee of the Senate Committee on Agriculture and Forestry who was planning to make sanitary inspection of dairy farms and plants a Federal matter.

At the District Committee hearings, Congressman Howard D. Smith (D., Va.) suggested that Murray favored "destroying the Washington milk market." Murray shot back that he "opposed all rackets...I don't care if it's yours or whose it is." These remarks precipitated further warm exchanges. An observer from the National Cooperative Milk Producers Federation shook his head sadly at the internecine war among dairy Congressmen who only a few weeks before had stood solidly against the repealer of the Federal tax on margarine. "We were afraid of this," he said, "when the margarine law was passed." 1/ Meanwhile, the Senate hearings proceeded somewhat more decorously. There Mr. William B. Hooper, office manager of the Maryland-Virginia Milk Producers Association, appeared, "flanked by three lawyers and two Virginia Senators. Senator Robertson (D., Va.) expressed the belief that the association had been "most unfortunately misrepresented" and Senator Byrd agreed. Meanwhile, the House hearings produced some testimony that the vaunted District inspection was less rigorous than it had been heralded--and further produced a charge by Congressman Andresen (R., Minn.) that the District was a closed shop and also (and somewhat irrelevantly since the District was not operating under a Federal order) that the Agricultural Marketing Agreement Act of 1937 was then the father of "36 legalized monopoly markets." Meanwhile, there were indications that the Washington milk shed was being slightly enlarged by the inspection of additional farms in West Virginia, Pennsylvania, and on the Eastern Shore of Maryland. 2/

On July 18, the U. S. Department of Agriculture reported that milk prices in the District were lower than in 26 other cities and also that only eight of 100 cities paid more to farmers delivering whole milk. Hailed by friends of the status quo, the report was promptly criticized by those who advocated changes in District milk laws on the ground that most of the cities with higher consumer prices were relatively remote from the source of supply--14 were in the South and several were said to import their milk from 1,000 miles away. 3/ Meanwhile, the lines of political interest became clearer as "independent dairies," those wishing not to buy from the Maryland and Virginia Milk Producers Association, sought permission to "import" milk from "outside." A representative of one such dairy requested that Congressman Howard W. Smith (D., Va.) disqualify himself from sitting on the subcommittee considering the Miller bill on the grounds that Smith owned several northern Virginia

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1/ John W. Ball in the Washington Post, July 13, 1950.

2/ John W. Ball, Washington Post, July 14, 1950.

3/ John W. Ball, Washington Post, July 19, 1950.

dairy farms, supplying the Washington area, and that House of Representatives Rule No. 8 required all members present to vote on all questions "unless he has a direct personal or pecuniary interest..." But Smith righteously declined. 1/ The Washington Restaurant Association indorsed the Miller bill, but the Milk Drivers Union (Teamsters Local No. 246, AFL) opposed it. 2/ In August, the District Commissioners modified health requirements somewhat and provided for both chemical and steam sterilization, although continuing to score the latter higher than the former. In consequence, the House District Subcommittee voted to delay action on the Miller bill over Congressman Miller's protest that the Commissioners had actually continued to favor steam sterilization over chemical sterilization--"just the rule that my bill was designed to rescind." 3/

On October 20, 1950, however, the District Commissioners announced a ban on all outside milk as of October 31, authorizing Dr. Seckinger to permit such milk to come in (a) if a shortage developed and (b) if such milk was certified as Grade A by a State board of health. Embassy and Wakefield, "independent" dairies, immediately complained that the action was taken under pressure. They demanded the "right to continue in business." Dr. Seckinger retorted that the independents had submitted 292 farm applications, subsequent to the recent modification of District requirement to permit chemical sterilization, but that only five of these could qualify, even after 447 inspections. The addition of some 500 District-approved producers during 1945-49, he added, had first prompted the Commissioners to take steps to re-impose the 1925 ban, which had been in abeyance since 1942. 4/ Back came the embattled interests. A few days later Dr. Seckinger, in the midst of a session to determine whether a milk shortage existed, was informed that the Commissioners had decided that that question was for them to decide and not him. He was also stopped by the corporation counsel from permitting independent dairies from using State-inspected milk to supply nearby Army and Navy installations and handling such milk in the same plants as milk approved by D. C. inspectors. Meanwhile, Senator Gillette demanded that the Commissioners afford quick answers to a number of questions that raised the same issues which had agitated hearings in the summer. The Commissioners finally decided (a) to require that only D. C.-inspected milk be sold to District consumers, but that outside milk, if handled separately, could qualify for sale

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1/ Richard L. Lyons, Washington Post, July 22, 1950.

2/ Washington Post, July 25, 1950.

3/ Washington Post, Aug. 2, 6, 17, 1950. The actual spelling out of regulations was left in the hands of Dr. Daniel L. Seckinger, District Health Officer, but with instructions to favor steam.

4/ Thomas Winship in the Washington Post for October 20, 1950; and two unsigned articles on October 21 and 24.

outside the District and could be brought into the District for distribution outside. They also told Senator Gillette that they were working on his questions. 1/

Just before the deadline for imposition of the proscription of "outside" milk, October 31, 1950, District Judge Alexander Holtzoff granted a 10-day stay on petition of the Wakefield Model Farms Dairy, thus enabling it to continue sale of outside milk in the District. On November 8, however, Judge Holtzoff ruled that the District's regulations were not "obviously unreasonable," and thus forbade Wakefield from continuing to sell outside milk within D. C. limits. A few days later the District Commissioners authorized the Health Department to double its dairy farm inspectors (the allegedly inadequate number of whom had been one source of contention), and by November 16 all three independent dairies had given up the fight and agreed to buy only District-inspected milk. 2/

In 1951, the Washington, D. C., Junior Chamber of Commerce reopened the controversy by urging District Commissioners to adopt the U. S. Public Health Service's Uniform Milk Code, then in effect in some 34 States, which gave equal weight to steam and chemical sterilization in scoring dairy farms for sanitation. The Jaycees also called for an investigation of the Maryland-Virginia Milk Producers Federation, which had been convicted in District Court of conspiring to restrain trade only to have the conviction reversed in the Court of Appeals. 3/

On May 23, 1952, the District Commissioners finally banned from the city all milk from farms other than those approved by its own health department. The 3 to 2 point score differential in favor of steam over chemical sterilization was also abolished. Reinstatement of the complete ban on imported milk was based on an interpretation which held that permission to outside milk to enter the District from 1942 to 1952 (but under considerable restrictions after 1950, as noted) had been

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1/ Sam Zagoria in the Washington Post for October 25-27, 1950. Gillette got his answers in November. See Washington Post articles cited in next footnote.

2/ Sam Zagoria in the Washington Post for November 9 and 17; unsigned articles on November 11 and 16, 1950. Embassy Dairy, however, an "independent," served notice that it might again seek to import outside milk after January 1.

3/ Washington Post, November 27, 1951; the District Case was decided in May 1950; the reversal in November 1951.

illegal. Said Commissioner F. Joseph Donohue, "If anyone shows us that our action creates an unnecessary monopoly, we ought to do something about it." 1/ To June of 1955, apparently, little has been done to alter the situation. 2/

Interpretation. This sketch of some recent events in the Washington, D. C., milk market shows that a municipality may be the political unit which rationalizes an agricultural market (or which throws barriers across the stream of commerce, as you will) the fact that Congress happens to be the city council does not disqualify the example, but it does magnify the protests of "outside" interests in the committee rooms! Washington, D. C., is also an excellent example of the potentialities of health inspection for controlling the effective milkshed. The District market also shows that public and private groups may be closely intertwined in a scheme of market control. Thus the cooperative, a number of handlers, and possibly the teamster's union as well as the city health department together maintain and operate the Washington dairy marketing system--and the excellent channels to political power of some members of this combination are indicated by the fact that when a ranking employee of the farmers cooperative came to testify before a Congressional committee, both Virginia Senators appeared with him.

Washington, D. C., also demonstrates the toughness of a marketing system which has grown up over a period of years during which large vested interests have accumulated. During all this period, it should not be forgotten, Washington consumers have been provided high quality and sanitary dairy products at a price which many of them, at least, have been willing and able to pay. Moreover, when the population and demand for milk rapidly increased in and after 1942, the restrictions on outside milk were relaxed. When reimposition of these restrictions was announced in 1950, agitation produced some modification, including (for a time, at least) the possibility of using milk produced on farms using chemical sterilization, the inspection of some additional farms,

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1/ Washington Post, May 5, 1952. The ban was announced for November 1.

2/ In 1953, Congressman Andresen (R., Minn.) said: "Of course, in the District of Columbia they have what they call a closed shop, with no milk marketing order." Professor R. W. Bartlett (University of Illinois) agreed, saying that the situation was the same as in Virginia and in numerous other markets. Hearing, Special Subcommittee to Investigate the Dairy Industry in the U. S., Committee on Agriculture, House of Representatives, 83rd Cong., 1st Sess., Part 3, p. 448. In the same year The Dahlberg Report appeared, op. cit., with its weighty, if rather obscurely phrased, criticism of the use of sanitary inspections to restrict the flow of milk, with specific citation of Washington, D. C. Dr. Dahlberg testified in 1955; while he did not dilate on the Washington market, if any marked change in its use of sanitary inspections had occurred, he would surely have commented upon it. Various personal sources also bear out that continued existence of these sanitary restrictions. Hearings, Subcommittee on Dairy Products, "Study of the Dairy Industry," House of Representatives Committee on Agriculture, 84th Cong., 1st Sess., Serial M. Part 1.

and the employment of additional inspectors. So the Washington marketing system is not completely inflexible. Whether it achieves its ends as efficiently as can reasonably be expected is another question.

5. Private Control

As earlier sections have indicated, private control of milk marketing has often been of considerable significance in organizing markets and perhaps in shoring them up against outsiders. More often such control is supplemented by State and Federal action, however, and ordinarily the separation of private controls from public regulation can easily be pressed so far that it hurts the accuracy of the final interpretation. Nevertheless, private controls have sometimes been effective. The trade association combination that maintained a policy of no differential between store and home-delivered milk in Chicago until about 1930 has been mentioned. So has the combination of numerous elements in the dairy industry in Chicago (handlers, cooperative, labor union, bottle exchange, and municipal officials) that figured in the anti-trust suit (1939) 1/ that resulted in a consent decree and a Federal order for Chicago milk. But private efforts to organize the Chicago market did not cease.

In 1951, the Dean Milk Company sued seven dairies, a chain store, and a chain store official for triple-damages under the Sherman Anti-trust Act. Testifying on behalf of Dean, a retired employee of the Bowman Dairy Company, Mr. Hezekiah C. Eggleston, said that after the milk price war precipitated by Meadowmoor Dairy in 1932, several dairies, including Borden, Bowman, Capitol, and others mutually agreed not to take each others' customers while they were trying to adjust prices. Meadowmoor became party to the agreement in 1936 or 1937. But Hawthorn-Mellody Farms Dairy Co. got started in business by taking some of Borden's customers, whereupon Borden organized Ridgeview Dairy as a "fighting company" and followed Hawthorn's trucks around, called on its customers, and underbid Hawthorn until the latter came into the fold. Then in 1942--after the Federal anti-trust suit and the consent decree--Bowman lost its sales to the A & P stores, following a decision which Eggleston said was made in New York and which was explained in part by the fact that both Borden and A & P are national companies. Mr. Eggleston and Mr. Cameron Peck, according to the former, then went to New York on behalf of Bowman's and made a deal to give A & P $50,000 in lieu of past discounts and to allow the chain a future discount of 11 percent, a discount not extended, according to Mr. Eggleston, to other companies. The witness also said that Bowman and Borden then agreed to take turns on big accounts by filing fake bids against each other. 2/ Apparently this set the stage for a move by Mr. John F. Cuneo,

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1/ U. S. vs. Borden and Co. 308 U. S. 188.

2/ Clarence R. Dore, Chicago Daily News, March 24, 1951. The suit was for $15,000,000; it was settled out of court for $1,125,000.

Chairman of the Board of the National Tea Company and part owner of Hawthorn-Mellody, to transfer the First National store market to Hawthorn-Mellody from Dean Milk Company, and this action precipitated the suit. Thus the Chicago experience demonstrates the propensity for handlers to make mutually satisfactory arrangements to organize the market.

Labor unions have also acted to organize the fluid milk market. Reference is to the operations of milk drivers unions, locals of The Teamsters (A.F.L.). Thus in Chicago the Teamsters local 753 was among those indicted in the late 1930's in the anti-trust suit, already noted. It was one of the parties made subject to the consent decree in 1940; and it has been accused of violating that decree from time to time. In 1954, the union and its officers were subjects of Federal criminal and civil defense suits for violating the current decree. 1/

On their own behalf (and sometimes on behalf of others, as well) milk drivers locals have sought not only to increase their members' wages and to improve working conditions; they have also sought to maintain members' jobs. As cost of home-delivered milk has risen, the rise being in part attributable to higher labor costs, store sales have increased where store differentials have been permitted. Teamsters Unions have fought to prevent store-home differentials by law; their representatives have frankly stated their interest in preserving members' jobs.

The same unions have also fought paper containers and multi-quart deliveries. In Chicago also the Union helps maintain the city ordinances requiring fluid milk to be dated and to be sold within 48 hours of its date. Like so many ordinances, this one was reasonable when it was adopted in the 1930's, but since that time milk grades have improved, and so have the facilities of both stores and consumers to keep it. If the dating requirement could be eliminated, large savings could (reportedly) be made in preparing milk for market. 2/

Union activity should not be too sweepingly condemned, as some farm representatives are all too ready to do on almost any occasion. 3/ On this point, as on others, the National Grange's report is admirably statesmanlike. If Unions have been accused of violence, it should not be forgotten that dairy farmers have resorted to violence, too - and,

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1/ National Grange report, op.cit., p. 57. Of the Chicago Sun, May 25, 1947, and the Chicago Daily News, July 31, 1954.

2/ Materials in this paragraph are drawn from the National Grange's study, Ch. IV, except for the last item respecting the Chicago dating ordinance, which comes partly from interviews and partly from the press.

3/ Some union activity seems reprehensible however; note the boycott of deliveries to stores, deemed to be price cutters, but actually organized to provide milk for low income families. New York Times, March 1, 1955.

on at least one occasion, since the milk strikes of the 1930's. 1/ It may also be recalled that in Oregon and New Jersey, CIO representatives have publicly differed from their A. F. of L. brethren on issues of State milk price control. 2/

Finally, private action is frequently interrelated--as the anti-trust indictment in Chicago indicated. Years ago, before the public regulations, private agreements (in spite of antitrust laws)were rather general in fluid milk. Informed persons believed that the Teamsters' Union was often then the policeman of the private agreement--a policeman who used a night stick, if necessary. Today this function is less apparent, but the mutuality of action between labor unions and milk handlers has not entirely disappeared, as a recent suit for the triple damages under the Sherman Act indicates; 3/ and the mutuality of interest between unions and handlers was demonstrated by the cordial defense of labor unions by Benjamin F. Castle, Executive Director of the Milk Industry Foundation--some handlers also have vested interests in maintaining a high volume of home deliveries. 4/

Lastly, it should be recalled that farmers cooperatives have also at times been the policemen to enforce agreements between private groups to control milk markets. Thus in the Washington, D. C., market the cooperative was pledged to "deprive price cutters of adequate supplies of milk, interfering with the transportation of milk to them, and furnishing milk to...distributors at reduced rates for use in taking away contract business from price-cutters..." 5/ and on at least one occasion, the National Grange reports, dairy farmers and the milk drivers' union have formed an aggressive political alliance. 6/

1/ "Armed Louisiana Farmers Dump Milk in Price Strike," Chicago Sun, March 26, 1947; for the strikes of the 1930's, see House Hearings, "Study of the Dairy Industry," 1955, Vol. 1, op.cit., pp. 309-310.

2/ The Grange Report, op.cit.

3/ The Grange Report, pp. 56-7.

4/ House Hearings, "Dairy Industry," 1953, op.cit., Part 2; contrast in the same hearing the testimony of R. B. Bush, Manager of Lucerne Milk Co., a subsidiary of Safeway Stores.

5/ U. S. vs. Maryland and Virginia Milk Producers Association, Inc., et al., 179 F. 2d. 426. But this case, which was remanded to the District Court eventually returned to the Court of Appeals and was reversed on the ground that the Government had not provided sufficient evidence to sustain criminal indictments. Md. and Va. Milk Producers Association vs. U. S. 193 F. 2d 907 (1951).

6/ The Grange Report, op.cit. pp. 54-5.

6. Conclusions

Economics and politics meet in the production and distribution of fluid milk. Early efforts, both private and public, to regulate fluid milk markets can be described as attempts to subject economic laws to social and political laws, or perhaps to reconcile the former with the latter. Market institutions were created in an attempt to discipline economic forces and yet to give economics its due--classified price schemes, the development of formula based upon manufactured milk, and the later refinement of formulae; all attest to the effort to reconcile group and personal interests in security with economics. When the institutions emerged and became part of the ongoing community, [1] they became subject to the ceaseless drives and counter-drives of the various groups involved and subject, too, to the strains imposed by shifting supply and demand and by technological upsurges. For some time these institutional arrangements for fluid milk were adaptable enough to serve the needs of the American community fairly well. But recently there are signs that the strains on the system are growing perhaps to the breaking point--signs in the numerous group and committee studies of milk marketing and, more fundamentally, signs in the economic effects, from dairy farm to retail outlet, of technological explosions and of mathematically rather small but economically very significant shifts in demand-supply relationships.

Against this conception of the subject and of what is happening to it, the present paper hopes only to throw some light on the institutional setting of the fluid milk market. Something there is that does not love unregulated dairy markets. Neither private groups nor the Government apparently can let milk alone. Not all the social and political arrangements imposed upon the flow of milk should be viewed as arbitrary mishandlings of a process which, left to itself, would find the proper channels. Few educated persons would want to abandon sanitary standards imposed upon fluid milk (in this country, at least; the Swiss, one hears, prefer that consumers do their own pasteurizing, as what would happen if the pasteurizing plants broke down?) Nor would a movement to remove all regulation in favor of producers command wide support; producers, it is generally felt, should have the benefit of what are, in effect, flexible price supports plus an honest accounting system; the nature and importance of their product demands it. Finally, the writer believes that milk marketing regulation should go beyond producer price supports, economic rationalization of distribution, and the provision of sanitary controls. All these should be part of a general policy for fluid milk, a policy which should place considerable emphasis upon a program to increase milk consumption. If more milk were made available to more people, sounder milk drinking habits should be acquired. This end should be accomplished if the present school milk program were sharply expanded. Results under our public program for school milk contrast quite unfavorably with the achievements of the British. Since 1940 the British have served free milk to children in schools. While this program can hardly have been the sole factor, it must have contributed importantly to the advantage that the United Kingdom has gained over the United States during these years. In 1940 British per capita consumption of fluid milk was .52 pint daily; by 1952 it was .86 pint. In the same period American per capita consumption increased from .64 to .76 pint. 1/ Given the emphasis of the present administration upon "liberalism for the individual," a greatly expanded school milk program would be an excellent example of "deeds, not words."

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[1] This conception of institutions corresponds, the writer believes, to that employed by Talcott Parsons; that is, institutions here are foci or centers or lodestones for the orientation collectively shared by the people of a society, or some significant part of them. The orientation includes expectation, it includes cognition, and it also embraces affective (or sentimental or emotional) recognition. Cf. Essays in Sociological Theory, Pure and Applied (Glencoe, Ill.: The Free Press, 1949), pp. 6-7. Strictly speaking, the writer is referring to organizations which manifest the particular institutions of government, of economic collectives, and of the market.

What can be drawn from the foregoing to help characterize the institutional framework in which fluid milk is produced and distributed? Private and public efforts to rationalize this process are prevalent. Private groups formed and developed market organizations embracing, as we have seen, farmer cooperatives, labor unions, handlers, and trade associations. 2/ But here as elsewhere in the effort to channel the economic forces characteristic of industrial society, private arrangements proved insufficient. Public agencies were called in first in the interests of health and later in the interest of economic regulation. As has often happened in other areas public economic regulation for milk began, at least, by formalizing private arrangements and bringing the force of public sanctions behind them. In milk, however, integration between sanitary and economic regulation developed to a degree that is unusual and perhaps nearly unique. 3/ Milk regulation illustrates the group process in and out of government--the way in which, sometimes almost imperceptibly, something different begins to take

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1/ Stewart Johnson in House Hearings, "Study of the Dairy Industry," 1955, Vol. 1, op.cit., p. 218.

2/ Milk illustrates an unusual degree of overlapping group membership, especially crossing lines that suggest economic class differentiations, such as labor and business, and social class distinctions, too, such as labor and agriculture; thus milk is a useful field for the application and testing of David B. Truman's influential theory of multiple group membership as the chief constitutionalizing factor in society; see The Governmental Process (New York: Knopf: 1951) last chapter and passim.

3/ Milk might therefore be further understood by reference to John Dewey's theory of the public in The Public and Its Problems (New York: Henry Holt, 1927; reprinted by the Principia Press, Bloomington, Ind., 1946).

shape in the form of collective action and especially of the imposition of group sanctions--something to be called government; 1/ the present writer in part accepts the conception of government as a kind of extension of social process--but in part he also believes that this conception fails to comprehend the really unique characteristic of government. 2/

In any event, milk regulation by State governments was a natural resource of harrassed dairy interests in the early 1930's and Federal regulation was demanded and obtained at the same time. New York's law fixing prices of milk to producers was carried to the Supreme Court where it blasted a hole in the constitutional doctrine of "categories of businesses affected with a public business" and helped introduce a new doctrine much more permissive of economic regulation by the legislature simply on the assertion by that body that it had found such legislation to be necessary and in the public interest. 3/ Hardly had lawyers digested this decision, however, when the Supreme Court struck down New York's price fixing activities as applied to handlers buying from Connecticut dairy farmers--on the grounds of interference with interstate commerce. Just as a famous constitutional decision denying State power to regulate interstate railroads in 1886 made necessary national regulation in the Interstate Commerce Act of 1887 if railways were to be regulated, so this decision prompted recourse to the Federal Government to regulate interstate milk markets. 4/

What emerges then is a regulatory scheme, partly Federal, partly State-local, and partly private. Such are the arrangements now subject to the explosive strains already noted. What is to be done? As experience of recent years has indicated, the courts are willing to step in and strike down some State and local regulation on the grounds of its reasonableness--this willingness marks something of a departure from the position which the court was enunciating in the late 1930's of hands-off the legislative function (and, as shown by discussion above of the case of H. P. Hood and Sons vs. Du Mond the justices are by no means all agreed on the wisdom of this departure). Helpful as court decisions may be in some matters, however, the judicial instrument is inappropriate for making major political settlements. 5/

1/ For a penetrating expression of this position, see Earl Latham, The Group Theory of Politics, (Ithaca, N. Y.: Cornell Univ. Press, 1951), esp. Ch. 1.

2/ This unique characteristic is evident to anyone who gets a letter from Uncle Sam that begins, "Greetings..."; see R. G. Collingwood, The Great Leviathan (N. Y.: Oxford University Press, 1941, 1947).

3/ This was the famous case of Nebbia vs. New York; but see the discussion of its significance in B. F. Wright, Jr., The Growth of American Constitutional Law (Boston: Houghton-Mifflin & Co., 1942, p. 179).

4/ The New York milk case was Baldwin vs. Seelig, 294 U. S. 511 (1935).

5/ Cf. Walton Hamilton, Antitrust in Action, TNEC monograph No. 16 (Washington, D. C.: Government Printing Office, 1941).

The same is true of administration, and this point needs some emphasis because of the apparent propensity to rely upon the efficacy of administration in resolving the difficulties of the dairy marketing schemes (see, e.g., the Gaumnitz report). The only administration which would be appropriate in terms of its jurisdiction would be the Federal--and we have seen how the Federal milk orders dovetail into and become part of more general systems of control. Important elements of these more general systems of control are both legally and politically out of reach of the Federal orders and of the USDA. No administrative decision or series of decisions can effectively meet the problems emerging in dairy marketing. 1/

Three general alternatives appear. The first is to let things take their course; various interests will fight in Congress and the State legislatures for their positions; cases will continue to be carried to court; entrepreneurs will seek ways to take advantage of technological possibilities. Ad hoc changes will be forced here and there, and it may be that the present condition of stress and strain will not prove insufferable and will, indeed, gradually disappear.

Another alternative would be for those in responsible public positions to apply J. K. Galbraith's model of power and countervailing power to fluid milk in order to see what can be done by Federal and by State legislation to help the part of the economy affected work itself out of its present difficulties. The writer has not attempted such an application but would be interested to see it tried. 2/

A third alternative might be to attempt a general political settlement. The idea here is suggested in part by the Grange's Report, "Barriers to Increased Consumption of Fluid Milk," where the development of comprehensive programs through joint planning of all groups concerned--business, farmer, labor, and other--is advocated, at least for the planning of annual production and consumption goals (Chapter III and Conclusions). But a general political settlement might well go further than what the Grange contemplates. Presumably it would establish a means for developing area or perhaps regional Federal orders; it would include reconciliation of State milk control acts with such Federal orders and with each other; it would set up some machinery in which highly political questions involving, say, interregional conflicts of interests could be adjusted by amendments to milk orders; and

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1/ Administrative difficulties can be seen in the problem that the Dairy Division and its predecessors have had in coping with the New York order--The tendency is for controversies involving this order to by-pass the Division and head for the Secretary's office--and they may not stop even at that elevated level! For general discussions of the problem, see Pendleton Herring, Public Administration and The Public Interest (New York: McGraw-Hill Book Co., Inc., 1936) and Paul Appleby, Big Government (New York: A. A. Knopf, 1945)

2/ American Capitalism (Boston: Houghton, Mifflin and Co., 1952).

it would provide for the reconciliation of differences in sanitary inspection and for the complete reciprocity of acceptance of one inspection by the officials in another jurisdiction. It might even provide the political support necessary for a really effective program of free milk for school children.

How would a political settlement be made? The first step might be to appoint a committee charged with explaining the problem and arriving at a tentative formula.

Recent years have produced multitudes of official committees to survey public problems like resource conservation, water policy, public aid to education, aid to highways, and so on, as well as the more general approaches of the first and second Hoover Commissions. The plethora of such committees, indeed has probably decreased the interests that any one such group can expect to generate in its proposals. A particular problem with milk is that of reconciling programs of the States (and the municipalities) with those of the Federal Government. Although proposals have been made from time to time for joint approaches of State and Federal agencies to common problems, 1/ the experience in this area is none too promising.

A word is in order about the general political process in its relevance for the making of dairy policy. Politico-economic policy for the dairy industry has apparently been the result of activities of interested groups with the acquiesence of the majority. Such minority legislation is fairly typical in the American scene. 2/ Neither political party seems in position to become the instrument of general policy making for an area like the marketing of fluid milk, although there are some indications that agricultural price policy generally has become somewhat

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1/ Cf. B. F. Wright, op.cit., p. 236 for a somewhat similar proposal for a Federal-State commission to regulate the division of taxing powers.

2/ See John Dickinson, quoted in Lindsay Rogers, The Pollsters (New York: Knopf, 1949) chapter on majority rule. The evidence for this is found in the fact that the Federal marketing program for milk has gone year in and year out with very little public notice--in contrast for example, to the widespread discussion of general farm price policy since 1947. Evidence is also found in the fact that State milk price control laws are produced in States with very different political organizations and partisan characteristics.

more partisan in recent years. 1/ In the absence of a much sharper crisis than the present one, and in the absence also of a crisis rather more widely felt, it is doubtful that the disparate forces which would have to negotiate a general political settlement can be brought together. Meanwhile, it is important to reiterate that present administrative bodies cannot be expected to do what only such a general political settlement could arrange.

What we seem to be left with as the most probable choice is the first alternative above. Even if this kind of "muddling through" led to a breakdown in the present system of regulation, the consequences would probably be supportable. The economy has emerged from such crises as the bank holiday in 1933 little the worse for wear. While the area of decision under review in these pages is by no means trivial, neither is it among the most vital areas before the public in such trying times; neither the survival of the American political community nor the preservation of its essential constitutional liberties hinge upon resolving the difficulties in fluid milk marketing.

1/ Cf. the writers "Farm Price Policy and the Farm Vote," to be published in the Journal of Farm Economics, November 1955.

PUBLIC AND PRIVATE RESPONSIBILITY IN MARKETING

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I

It is not hard to describe and classify the various public and private activities in marketing. And it is rather fun to speculate on the reasons why public and private agencies undertook these various marketing activities in the first place. But it is tremendously difficult to find a firm footing, or any footing for that matter, on which to construct an argument with respect to what should be the responsibilities of public and private agencies in marketing. The going becomes treacherous once the discussion enters that normative land of "what ought to be."

Perhaps some headway can be made in the way of assigning responsibility for carrying out the various activities and operations of the farm marketing system, if agreement can be reached with respect to the nature and extent of decision-making appropriate to each type of marketing agency. For once the decision-making responsibility is fixed, it becomes possible to suggest criteria for guiding or rules for governing the decision-making of the agencies involved. In any event this is the approach that we will follow in this paper in dealing with the topic "Public and Private Responsibility in Marketing:" first a description of marketing activities by type of agency, second the fixing of responsibilities for decision-making, and third the suggestion of rules for governing the decision function.

II

The activity of private firms in the marketing process focuses on one principal objective--the entering into a series of transactions over a period of time to maximize profits. The maximization of profits through a series of private business transactions (i.e., agreements to purchase and sell under specific conditions), requires that the firm make decisions on four different but related planes: (1) the acquisition of resource inputs (i.e., what resources and how many to use), (2) production or handling methods (i.e., what technology to use), (3) the quantity of product (i.e., how much product to produce or handle), and (4) the sale price of the product (i.e., what price to charge for a product, or in competitive markets whether to sell at the given price). Decisions on these four planes, some of which involve negotiation with other decision makers and others of which involve various levels of technical skill must be integrated, or made to mesh, in an efficient schedule of operations if profits are to be realized by the firm from its transactions. The integration of decisions on these different but related planes is the exclusive task of business management, and the activities growing out of those decisions constitute the primary activity of private firms in the marketing process. This general activity covered in the literature under the theory of the firm, we define and refer to hereafter as the transaction activity.

Two other activities are becoming increasingly associated with private firms: (1) the development of new technologies and (2) the promotion of welfare activities in the community. For want of time these activities will not be discussed here except to say that the first parallels and becomes a part of the general transaction activity whereas the second is more apt to come into conflict with the transaction activity.

In economies where freedom of consumer choice and freedom of occupational choice are highly valued, and where specialization makes trade necessary, the transaction activity is typically and generally undertaken by private firms. This is the positive meaning of Laissez faire in the long struggle with Mercantilism; private enterprise felt that it must gain the ascendency over the state in the control of transaction activity; private enterprise knew that it could not thrive and grow where the state specified the use of resources, methods of fabrication the price of the product and so on. Even the theory of a socialist economy calls for the transaction activity to be undertaken by independent decision-making units owned by the state.

The reason why the private firm invariably undertakes the transaction activity is not hard to find. Integrating the decisions of the firm on four different planes to yield a profitable schedule of operations is a task that requires an intimate knowledge of those operations and continuous decision-making with respect to them. This is so, because any change that comes along, say in the price of resource inputs or the behavior of a competitor affects the profit rate in some way and thus must be taken into account in the schedule of operations to insure profit maximization; this means adjustments and modifications at any point or all along the line; in the resources used and, methods of production, quantity produced and the price of the product. Only an independent management, close to the operation and with a strong incentive to achieve a successful operation can discharge this task satisfactorily. And the private business firm operating in the context of the competitive game provides this type of management situation, or at least comes closer to providing this management situation, in practice than any other set of institutions yet devised.

The rules of the competitive game vary, of course, from time and place, imposing different degrees of restriction over the decision function of management. In the history of the United States the nature and extent of these rules have and continue to evolve and change. In a frontier economy there are few if any established and enforced rules of competitive behavior. The fur trade of the early far West, the gold fields of California and Alaska and the cattle country before the coming of the homesteader were truly laissez faire economies; in practice the state exercised no control over the transaction activity in these situations. But only the very strong or the very ruthless find this degree of freedom tolerable, hence "law and order" (i.e., rules of competitive behavior) are always brought to the frontier. At the other extreme, the economy was blanketed with rules directing and controlling transaction activities during World War II. The imposition of these wartime controls had the effect of transferring from private firms to government parts or all of two planes of decision-making in the transaction activity—namely, the acquisition of certain resources and the pricing of the product. This transfer to government of parts or all of two decision planes created new and serious problems in the integration of all decisions, hence activities, at the firm level. The broad, general decisions of government, infrequently made, could not fit the peculiar and unique needs of each firm, hence the full burden of adjustment was thrust upon the remaining areas of free decision-making in firms.

Somewhere between these extremes may be found the economy of the United States in the 1950's. It has many rules governing the conduct, or actions, of private parties in the competitive game, but the core, or the heart, of each of the four decision planes comprising the transaction activity is reserved for the independent action of private firms. The competitive rules in force are, in the main, designed: (1) to make the competitive game tolerable to all concerned, and (2) to keep the game competitive over time. And perhaps with a few adjustments in these rules that each of us could think of, a happy balance could be struck in the 1950's between the attainment of a competitive game tolerable to all and the attainment of the optimum degree of freedom for decision-making within firms.

Turning now to the activities of government (i.e., the public) in marketing, those activities would seem to fall into four principal categories: (1) the provision of information, (2) the conduct of research and development, (3) the promulgation of rules governing the competitive game and (4) operations within the economy (i.e., the acquisition and/or disposition of services, supplies or resources) to influence the performance of the economy. These activities you will observe are ranked by extent of controversy and in ascending order, but all are marketing activities in which federal, state and local governments have been engaged.

The informational activity of government grows out of the widely held view that the successful functioning of the competitive system depends on full market information shared equally by buyers and sellers. The argument runs as follows: the marketer who lacks information is disadvantaged; he cannot act in his own best interest because he does not know what constitutes his best interest; hence he often sells his produce at a poor price, and a succession of such transactions leads to income inequities and dissatisfaction with the competitive system. Assuming this to be the case with respect to the farmers in their dealings with merchants and middlemen, the Congress established the Market News and Crop Reporting services as well as other informational services to provide farmers with more and better market information. This information has proved invaluable to middlemen too, hence there has been persistent pressures from these interests as well as farm groups to expand the various informational activities of the government. Hence information is now collected and disseminated for the use of consumers, middlemen and farmers by all mediums of communications and on a multitude of topics and subjects.

A society that places great stress on material progress quickly becomes impatient with a sector of the economy that is not making progress commensurate with other sectors. And the view gained acceptance in the 1920's and again in the 1940's and 50's that this was the case with respect to the farm marketing system--that it was doing a poor job; that it needed to become more efficient. Whether this view is correct or incorrect is irrelevant; it is a view widely held. As a consequence, the federal government has sponsored a general program of research in the marketing of farm products. This research falls into four principal categories: (1) descriptions of the system; (2) efficiency studies; (3) the development of new products; and (4) the search for inequities. The first has contributed to the informational activities of the government--to the provision of over-all descriptive pictures of the operating system, hence to an understanding of it. Researches leading to increased efficiency assume two forms: (a) the development of new production or handling methods (i.e., new technologies) and (b) ascertaining the optimum use of known resources.

Some interesting and controversial questions can be raised with respect to how gains in marketing efficiency are shared. It can be demonstrated, under static analyses for example, that gains in marketing efficiency will be shared between farmer-producers and consumers in accordance with the relative slopes of the demand and supply relations: the greater the slope of the demand relation relative to the supply relation the greater the share of the gain which goes to consumers, and conversely. And in the case where the slopes of the relevant relations are approximately equal, which would seem to be a common commodity case in agriculture, the gains would be shared equally. But in the dynamic context in which marketing efficiencies are actually introduced, we may get very different results. The innovating firm experiencing a gain in efficiency must pass some part of that gain along to consumers in the form of lower prices, if the firm is to expand its sales at retail. The intense competition for the consumer's food dollar forces this result. But this single firm probably will not be required to pay farm producers a higher price to acquire supplies. This follows from the fact that competitors of the innovating firm will be losing sales at retail and hence require fewer supplies at the farm level. And whether the static analysis properly describes the long run solution after the industry -- wide adoption of the efficiency, depends upon the extent to which farm surpluses and government programs are involved in the commodities in question. Thus researches leading to marketing efficiencies may have rather limited beneficial implications for farm producers.

The development of new products, or nonfarm food services, hold great promise for processors and handlers who are in business to supply nonfarm food services, but again probably not so great promise for farmers, except insofar as they are consumers too. Inquiries into equity, the fourth category of marketing research have assumed all sorts of forms; the search for exhorbitant middlemen profits at one extreme, intensive studies of price support programs at the other with various and sundry margin studies falling in between.

In sum, government is engaged in a great deal of research into the farm marketing system, and it is financing a lot more. As a result the consumer has clearly gained in terms of new products and lower prices. Gains in the returns to farmer-producers, on the other hand, are more debatable. But of equal importance, all of this research in marketing has contributed to a better understanding of what the farm marketing system can and cannot do, and more perspective for appraising developments in it. For example, the idea is beginning to take shape that the receipt of a gradually declining share of the consumer's dollar by farmers does not mean increased inefficiency in marketing; that the income elasticity of food service may be much greater than the income elasticity of food; and that service industries do not experience the spectacular increases in worker productivity common to fabricating industries. This type of knowledge becomes basic to wise decision-making by government with regard to the undertaking of other activities in the farm marketing system.

From the adoption of the Constitution to the present, Federal as well State and local governments have given serious and continuous attention to the rules under which the economic game is played. In the field of agricultural marketing the promulgation and enforcement of rules governing the transaction activities of private firms have been common. The Grain Standards Act is a case in point: this act gives the federal government the authority to establish uniform standards which shall apply to all grain sold or shipped by grade in interstate and foreign commerce. Standards are now in force for wheat, corn, barley, rye, oats, grain sorghums, flaxseed and mixed grains. The Packers and Stockyards Act specifies another set of rules governing the transaction activity; the United States Warehouse Act another, and so on. Rules governing the conduct of competitors have been set forth in the various anti-trust laws since 1890, but exemptions to certain of those rules were granted farmers' cooperatives under the Clayton Act of 1914 and the Capper-Volstead Act of 1922. Thus competitive behavior of one sort is sanctioned for one type of institution, and another sort for another type of institution. The handling and processing of food come under the surveillance of various public agencies: processed and other foods moving in interstate trade must meet standards established by the Food and Drug Administration whereas the preparation and sale of food in restaurants typically falls under the control of local sanitary ordinances. So we have established a large number of rules for controlling the conduct of individuals and firms engaged in the economic game.

Direct action by government in the economy to influence the distribution of income and/or goods and services has assumed some new forms and perhaps greater importance in recent years. This latter is particularly true with respect to the distribution of food products and farm incomes; the government has had an operating role in the food and farm income distribution processes during the past 20 years, unknown to it in earlier years. In the 1930's the federal government operated direct distribution programs, school feeding programs and a stamp plan to put food in the mouths of people in desperate economic straits. During World War II the federal government again got into the food business on a large scale: for example, set aside orders were employed to channel supplies to the armed forces and our allies and point rationing was employed to effect an equitable distribution of food supplies among civilians. And, of course, the operations of the Commodity Credit Corporation before and after World War II represent direct action by the government in its most grand form.

Although direct action by government in the farm marketing system was relatively minor prior to 1929, government has over the years played an active role in other sectors of the economy: in the distribution of land, in the provision of communication services (e.g., in railroad building) and in the provision of educational services. Thus, active participation by government in the economy is not new, it is only relatively new in the farm marketing system.

III

We have reviewed the activities of private firms and public agencies--what each have been and are doing--in the farm marketing system. And we observe several things: (1) both private and public agencies are engaged in activities important to the performance of the farm marketing system, (2) the activities of public agencies have increased relatively over the past 50 years, and (3) the form and purpose of activities undertaken by government have changed importantly over the years and they continue to change. The question to which we now turn is the following: Whose responsibility are those decisions which have changed and continue to change the form and purpose of activities undertaken by government in the farm marketing system?

It seems abundantly clear that operations undertaken by government in the farm marketing system to affect the distribution of income and/or goods and services (e.g., a National Food Allotment Program) are concerned with questions of equity. The purpose of these operations is to influence, or affect, the amount of material goods that one person has relative to another. And this is what we mean by equity--purposive effort to distribute wealth, real goods and services, among men in a manner deemed to be fair. Now in our society who is responsible for making decisions involving equity? In the Anglo-Saxon tradition questions of equity involving two or more private parties are decided in the courts; questions of equity involving action by government, hence the use of police powers, are decided by legislative bodies. In our federal government these questions are decided by the Congress subject to judicial review.

Thus, decisions as to whether we should have more or less direct action by government in the farm marketing system to influence the distribution of food and fiber products, are clearly the responsibility of legislatures--not the responsibility of administrators, technicians or college professors. The same argument holds with respect to the responsibility for making decisions regarding rules governing the conduct of private parties in their transaction activities. Rules governing transaction activities have equity implications, because such rules influence to some degree the outcome of transactions, hence the money returns to the parties involved. Thus it logically follows again that decisions in this area fall in the province of legislatures.

This does not mean that you or I should not hold, or advance, opinions regarding decisions being made by elected bodies on equity questions. On the contrary, it is the obligation of citizens to make their opinions known on such questions in a democracy. This does not mean either that researchers in social sciences should not study equity questions, or subjects with equity implications. On the contrary, the minimization of discontent and strife in societies experiencing rapid technological and institutional changes depends upon the development of new ideas and ways of dealing with equity problems that always result from change. And it would seem that the kinds of ideas that are most likely to resolve serious equity problems are those that emerge from study and reflection rather than from camp meetings and crusades. But the point to be made is the following: the responsibility for making decisions with respect to acts of government having equity implications resides in elected legislatures acting for all the people.

The size of governmental expenditure for the provision of market information and marketing research is ultimately determined by the Congress or the elected bodies of state and local governments. But prior to this determination and following it the decision function rests in the hands of technicians and administrators of technicians. The budget recommended by an administration for the undertaking of informational and research activities is constructed out of the decisions of technicians, and the allocation of funds received results from the decisions of technicians — people like you and me. Thus, we say that the responsibility for making those decisions which govern the use made of funds in the informational activity and the research activity rests with the technicians and administrators of technicians.

This decision function was not wrestled away from some one else by the technicians; it came to them without fuss or fanfare; it came to them because of the nature of the activities involved. The activities are concerned with the realization of a specific purpose (or purposes) in a problematic situation made problematic by the complexities or unknown aspects of the situation. To realize the purpose of some particular activity, let us say the collection and dissemination of market price information is a nonorganized market such as the land market, the persons engaged in the activity must understand the workings of that market, have an intimate knowledge of the data needed by users and the "know how" of presentation and communications. Only a team of technicians would have the variety and degree of knowledge on these several facets to effect a solution to the problem situation. Hence, only the leader of the team, working in harmony with his men, could estimate the costs that would be involved in achieving the purpose of the above activity with reasonable accuracy. In sum, where the achievement of a specific purpose in a complex situation constitutes the activity, decisions with respect to the activity must perforce be made by the technicians; they are the only ones with, or having access to, the technical knowledge required to achieve the specified purpose, except possibly through chance.

The technical marketing man whether he be an economist, a transportation specialist or the administrator of a regulatory program thus does not make decisions having equity implications. In fact he has a responsibility to refrain from making such decisions except insofar as legislative bodies delegate that responsibility. Decisions involving the action of government in equity questions are the responsibility of legislatures. But the technical marketing man cannot escape decision-making with respect to the provision of market information and in marketing research. His special knowledge of problematic situations obligates him to aid society achieve its specific purposes in such situations.

IV

Having made explicit the division of responsibility for making decisions with respect to the four principal activities of government in the agricultural marketing system, we now turn to the formulation of working rules for guiding the decision makers in their respective areas. Specifically, three working rules will be discussed: one for the law makers in their equity efforts, and two for the technicians in their decision-making efforts.

By way of a digression, let me say that I would not be recommending a rule for guiding the affirmative decisions of legislators in matters of equity if I did not hold the view that this is a proper area of decision-making. In a positive vein, let me say that I believe that legislative bodies have the responsibility for inquiring into inequitous situations and taking action to correct or alleviate such situations. This is a continuous responsibility because new conditions are always developing as the results of: natural phenomena, wars and conflicts, technological advances, and changing institutions. And a changed situation involving a new combination of social, political, economic and physical elements invariably is accompanied by a change in equity relations either as a cause, or as a result, of the changed situation. So long as the change in equity relations is not great, the new set is tolerated, but when the equity position of a large segment of the society is adversely affected, and seriously so, a conflict results.

Now it is my observation that those national societies, which consciously and continuously seek through their representative governments to ameliorate inequitous situations, avoid cataclysmic social upheavals (e.g., in the United Kingdom and the Scandinavian countries). But those national societies that studiously avoid dealing with serious inequities within their societies, typically effect changes in their social structure by the means of force or revolution (e.g., Spain, Italy, France). And since I prefer social change by peaceful means rather than by force, I believe it is highly desirable, in fact a necessity, that legislative bodies in the United States seek out, study and take action designed to correct serious inequities within our society.

With this element in my value system made explicit let us turn to the formulation of one rule for guiding legislators in their efforts to ameliorate or adjust inequitous situations. In the promulgation of rules for governing the conduct of private firms in the transaction activity, or in the undertaking of operations within the economy, the government should seek to avoid the imposition of restrictions that excise, or negate, a part of the decision function of firms in the transaction activity. It will be recalled that the transaction activity involves decision-making, hence adjustment in four areas: (1) the acquisition of resource inputs, (2) production or handling methods, (3) the quantity of product, and (4) the sale price of the product. Now the government in its efforts to create more equitable situations should seek to avoid reducing any one of these decision areas to a constant wherein operational adjustments are blocked.

The imposition of any rule to control the conduct of private firms in the transaction activity will restrict decision-making somewhat. For example, a limitation on the number of hours that children or women may be employed per day or per week restricts to some degree the decision-making of employers in acquiring resources. But there is all the difference in the world between the above type of regulation and a regulation that fixes the sale price of a product. The former places a limit at the margin of the labor supply function--limits one minor aspect of acquiring resources, whereas the latter places a constraint over one complete plane of decision-making. The latter type of a rule reduces one plane of decision-making, hence adjustment, to a constant.

The problem here is to establish rules of conduct, or operations within the economy, which lead to greater equity, but which do not make it exceedingly difficult, or impossible, for firms to realize plans of operations that are profitable. The income tax is an ideal equity weapon because it is effective in redistributing incomes, but it does not interfere with the transaction activity. The tax is paid and the benefits are received completely outside the transaction activity. Price control on the other hand is a poor equity weapon. It is an inefficient redistributor of income, and it is introduced at the heart of the transaction activity; it interjects a rigidity at the key adjustment point--price. Within the marketing field, government set-asides to guarantee adequate supplies for vulnerable, or necessitous, groups would seem to create a minimum of interference in the transaction activity. On the other hand, the specification of production methods, say with respect to the amount of labor used, leads to a maximum of interference.

In sum, we cannot say that the government should not lay down rules of conduct, or itself undertake operations within the economy, if the maintenance, or restoration of equitable relations, requires such action. But in planning equity restoring actions, an effort should be made to avoid interfering with the transaction activities of private firms. Usually alternative ways of achieving equity exist, and where such alternatives exist, legislators should always choose the course of action which minimizes the interference with the transaction activity. This is rule number one.

Rule number two applies to the technicians and their administrators. Very simply rule number two says--"in the allocation of research funds to any technical field, in this case marketing, some proportion of that allocation should be set aside to the study of the equity implications of technological developments and other forms of change." No guide can be offered as to what proportion of the total funds should be allocated to this type of study, but some amount should be. The basis for this rule rests on the following combination of circumstances: (1) legislators must make decisions arising out of equity questions or having equity implications, but (2) rarely do they have the time to study the situation carefully, and (3) it is generally impossible to study a problem with equity implications either seriously or objectively during the decision period. Thus, there is a need for studies describing "who gets what under what conditions" to provide the law makers with something more than guesses and opinions. And such studies can be made: one procedure involves describing the consequences of alternative courses of action; another involves comparing actual behavior with accepted criteria of behavior.

Unfortunately there is little pressure for such studies, and often considerable pressure is generated against them. In the language of equity, the "haves" often use their influence to forestall, or abandon, researches into inequitous situations. The "have nots" on the other hand generally take their crusade directly to the legislative decision makers for some sort of redress. Thus, the technician in this area is often bypassed or suppressed. The study of an inequitous situation, or the pointing out in terms of accepted criteria the harmful consequences of a particular course of action, generally requires a high degree of courage. But this type of research work needs to be undertaken to provide the decision makers with reasonably accurate facts and some appreciation of the consequences of alternative courses of action. Such information is basic to reasoned and forthright decisions by the law makers in this value explosive field. Hence, the statement of this need as rule number two.

Rule number three again applies to the technicians, and it is concerned with a problem that is near and dear to the heart of economists, namely, the efficient use of resources. Here we are concerned with establishing a rule to guide administrators in the allocation of funds among projects in (1) the provision of market information and (2) marketing research. But it should be noted at this point, that the rule to be advanced is, because of the differing nature of the problems, of no help in allocating funds between researches in equity and researches in efficiency. As stated earlier, we know of no rule to guidefund allocations with respect to studies in equity, except to insist strongly that such allocations be made. The rule to be advanced here, for reasons that will become obvious, can apply only to the use of research and informational resources within the efficiency area.

It is a dictum of welfare economics, that the total welfare of a society cannot be demonstrated to have increased (or decreased) where state directed income transfers are involved. This follows from the fact that the loss in utility experienced by individuals losing income in such transfers cannot be compared with the gains in utility experienced by those acquiring income. State directed income transfers represent some sort of a solution to an equity problem--a resharing of existing goods and services by some accepted criteria. And as argued earlier, decisions regarding such transfers may legitimately be made only by elected bodies representing all the people.

The welfare of a society may, however, be said to have increased if the material wealth of some individuals has increased, and that of no one has been lessened. This then provides a clue to a rule for guiding decisions concerned with the allocation of research funds in marketing, or any other research area. If the technician allocates funds among research projects such that the results of those projects increase the flow of goods and services to some individuals, and the flow to no one is reduced, then he has avoided the equity morass and he has increased the total supply of goods and services, the latter of which is presumably why he is in business.

A start on a rule has thus been made: the technician decision maker in marketing will allocate funds in such a way that (a) equity relations are not directly affected (i.e., direct income or product transfers are not involved; the secondary effects of a technological advance may, however, have profound equity implications) and (b) the total supply of goods and services is increased. The conditions laid down in the above rule are necessary, but not sufficient. The rule does not guarantee an efficient use of resources. An efficient use of the total funds available for market information and marketing research will have been realized only after the various alternative uses have been explored, and the alternative selected which yields the greatest expected output of goods and services from that fund of resources. Thus the full rule for allocating funds in the provision of market information and market research is: funds will be allocated among various alternative uses in a way such that (a) the output of goods and services from that fund of resources is maximized and (b) the distribution of real income among the many persons involved is not directly affected.

This is one of those rules, it may be argued, that is good in theory, but hell in practice. An attempt to execute the rule in a precise fashion would no doubt prove the latter view to be correct. But in a rough way administrators of marketing research must operate in accordance with the above rule. An administrator that allocated large sums to packaging methods for prickly cactus fruit would probably find himself in trouble. And the administrator that recommended on the basis of known demand relations that fluid milk producers dump one third of their supply would certainly find himself in trouble. In each case the administrator has flagrantly broken rule number 3--in the first instance the (a) condition, in the second instance the (b) condition. In the language of the street, neither administrator has used good judgment. Good judgment and following the rule are thus one and the same. The execution of rule number 3, of course, becomes more difficult where information is poor, the facts are obscure and personal bias enters. For these more common cases then it is wise to have the rule stated explicitly and thus provide a guide to decision-making where the decision maker tends to be lost in imperfect information and day to day operations.

For example, the technician administrator may on occasion be pressured to collect specific information or do specific development work for some one firm. It may be the case that the allocation of funds to such work meets the test of rule 3 perfectly. But it may also be the case that it violates the above rule on two counts. First, the probability of increasing total production by some future date might be greater if the research funds were devoted to a more important or more general problem. Second, the assistance given one firm in the way of market development, or product development, might enable that firm to expand rapidly and secure an important competitive advantage over other firms in the industry. Either of the above cases is to be avoided, but either could result from loose administration.

In the administration of public funds to provide market information or to undertake marketing research it is not sufficient to choose a project that shows promise (i.e., reduces costs or increases output per unit of input). The project that shows promise of yielding the greatest cost reductions or increases in productivity should by the criterion of rule 3 be selected. At the same time the alternative that maximizes the output of real goods and services must not alter significantly existing equity relations. The conscious modifications of equity relations is the responsibility of society itself acting through elected bodies--legislatures, not that of technicians or administrators. Thus we have rule number 3 to guide the allocation of funds in those areas where the public seeks a more efficient economic operation.

In many ways this is a strange paper. In the main it is not economics. Nor is it political theory. Nor is it the theory or practice of marketing. It is social theory--social theory concerned with public and private responsibility in a mixed-enterprise, democratic society of the 1950's as applied to one field of activity, the marketing of farm products.

The approach is that of observing and classifying the activities of private and public agencies in farm marketing. This establishes the nature and extent of activity by agency, as well as the logical relation of one activity to another. The responsibility for making decisions in the transaction activity clearly falls within the province of private firms. On the basis of precedent and logical deduction the responsibility for making decisions by government in marketing is divided between elected representatives of the people and the technicians.

This approach does not produce any exciting revelations. On the contrary, and simply stated, it is concerned with conceptualizing what public and private agencies do in marketing, and who in the view of society should make the decisions in this doing. But this approach does force the question--Are there not certain rules that could be suggested to guide the responsible decision makers? And it would appear that there are; we suggest three. There are probably more. And these rules then become our answer to the question--What are the "Public and Private Responsibilities in Marketing."

Report of Work Group I

UNDERLYING OBJECTIVES OF MARKETING EFFICIENCY PROGRAMS

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Introduction

The task of this work group was to develop guides for establishing objectives in marketing efficiency. The concepts which were developed are intended to facilitate judgment and measurement of progress toward justifiable ends, as well as to suggest types of research, education and service activities most likely to contribute toward these ends.

The procedure followed by the group involved definition of the concept of efficiency, establishing a framework of analysis, testing it with respect to a concrete illustration, classifying the areas of research in which such a concept has meaning, and specifying the application of the concept in marketing research.

Definition of the Concept [1]

Efficiency was defined as the ratio of ends to resources. It is a single concept. But it is a concept with many applications. Symbolically the concept is $E = \frac{A}{B}$ where A represents ends in the broadest or narrowest sense depending upon the particular application and where B represents the resources which are used in the attainment of these ends. In this sense efficiency is a concept which has meaning to a doctor, lawyer, political scientist, farmer, economist, or consumer. It is a concept which has application to individuals and to groups. What makes the strategic difference between the individual and the group is the differing content each might give to ends and to the resources concerned. The many applications of this single concept thus involve the specification of the particular ends and of the particular resources devoted to them. Specifying the content of both ends and resources also involves explicit recognition of what is not being included and of the constraints which are being placed in the problem.

Framework of Analysis

The major assumptions basic to the concept of efficiency adopted by the Committee are as follows:

A. Members of society seek to maximize utility;

B. Since utility is not measurable, it is assumed in certain instances that the ends in the following classification may be substituted into the fundamental equation as A in whatever measurable units that may be devised, to indicate an ordering of utility, with respect to these ends;

C. The individual or group can best decide in light of the personal utility functions involved, which specific formulation of E provides the most relevant information to them in maximizing utility.

Ends-Resources and Level of Analysis

What are the principal goals or ends with which efficiency analyses are concerned? The ends (components to be maximized in a utility function) depend first on the scope of the problem being considered, i.e., the setting of the problematic situation; and second on the level of aggregation for the particular setting or sector, i.e., whether the analysis pertains to an individual within the sector, the entire sector, or some intermediate level. Efficiency examinations may pertain to any problematic setting and to any of the several levels within each setting or sector.

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[1] Differing views were expressed by members of the work group as to the interpretation of efficiency in particular situations, e.g., is maximum efficiency consistent with the maximum output of want-satisfying goods and services in all instances. In consequence, the views expressed in this report are not necessarily those held by all members of the committee.

Admitting this suggested classification, ends vary among individuals and groups and may be almost countless in their diversity. Nevertheless, it seems important to identify what may be adjudged the major ends or goals pertinent to many efficiency analyses. The following outline sets forth illustratively the ends relevant to the examination of efficiency at several major levels, this outline being oriented toward studies in agricultural marketing. An essentially similar framework could be prepared for studies in other problematic settings of the economy such as retailing, the lumber industry, etc.

I. Some considerations relevant to ends at the economy as a whole level

    A. Freedom

        (1) Economic--choice, entry
        (2) Political-Social--participation in decisions
        (3) Informed people--media of information exchange

    B. Security

        (1) Economic
        (2) Political
        (3) Military

    C. Stability

        (1) Economic
        (2) Political

    D. Growth--optimum--balanced or rate

        (1) Population
        (2) Resources
        (3) Institutions
        (4) Technology
        (5) Capital accumulation

    E. Output of goods and services

    F. Composition of output

        (1) Producer goods; consumer goods

    G. Distribution of output

H. Organization of production

  (1) Size and ownership of production facilities

I. Distribution of income

II. Some considerations relevant to ends at the level of total agriculture

  A. Freedom

    (1) Nature of regulation

  B. Security

  C. Stability

    (1) Income
    (2) Price

  D. Growth

    (1) Level of output
    (2) Resources
    (3) Productivity
    (4) Population--urban and rural

  E. Output of goods and services

  F. Composition of output

  G. Distribution of output

  H. Organization of production

    (1) Family farm
    (2) Business organization of firm

  I. Distribution of income

III. Some considerations relevant to ends at the level of the agricultural marketing system

  A. Security

  B. Stability

  C. Growth

  D. Output of goods and services

- E. Distribution of income
- F. Distribution of output
- G. Composition of output
- H. Nature of regulations
- I. Quality of product
- J. Nature of organization of production
    - (1) Character of competition

IV. Some considerations relevant to ends at the industry level

- A. Security
- B. Stability
- C. Growth
- D. Output of goods and services
- E. Distribution of income
- F. Distribution of output
- G. Composition of output
- H. Nature of regulations
- I. Quality of product
- J. Nature of organization of production

V. Some considerations relevant to the ends of a firm

- A. Profitability
    - (1) Returns to management
    - (2) Returns to owners
- B. Growth
    - (1) Output
    - (2) Profit
- C. Output of goods and services
- D. Nature of output
    - (1) Product lines
    - (2) Product prestige

- E. Power
- F. Acceptability
    - (1) Human relations
- G. Uncertainty
- H. Research

VI. Some considerations relevant to ends at levels within the firm

- A. Output of goods and services
- B. Quality
- C. Contribution to firm profit

It should be emphasized that the ends pertinent to a particular analysis can be specified only after a careful examination of the situation being considered. Likewise, it should be pointed out that the breadth of consideration given to a particular end generally will increase in moving from the local firm or plant to the economy as a whole.

The specific levels of aggregation suggested, as indicated in the foregoing are: (1) The entire economy, (2) agriculture, (3) agricultural marketing system, (4) industry, (5) firm, and (6) intrafirm. An industry, as used in this classification, pertains to firms handling similar products or performing similar functions. The intrafirm level, in some situations, may need to be further subdivided to operations, jobs, and other subordinate classifications. In some problems it will be necessary to add a seventh level--the individual--particularly in instances in which the actions of individuals as consumers are being examined.

With respect to inputs or resources (B in the efficiency formulation), all resources are considered which are used to achieve the ends specified. The kinds of resources which can be substituted one for another likewise depend in part on the ends specified.

Significance of this Formulation of Efficiency

The above definition and framework are believed to be useful for both classification and evaluation. Various dichotomous classifications which view efficiency as either (a) operational or pricing; (b) macro or micro; or (c) public or private are rejected. There are many classifications involving the variety of ends which might be sought and the variety of resources which might be used. There are many levels of aggregation at which the concept of efficiency is valid. They range from the individual and intrafirm elements to the economy as a whole. So long as the content of both ends and resources are specified together with the level of aggregation, a framework is provided in which particular studies of efficiency may be placed.

Any study of efficiency may be evaluated within this setting. The choice of a specific end among many, and of particular resources, for a study of efficiency at a particular level of analysis requires explicit recognition of the existence of other ends and other resources both at the given level of aggregation and at other levels. It involves recognition that inconsistencies may exist in maximizing efficiency within and between ends and levels of aggregation; and that a practice or device can be efficient at one level and inefficient when evaluated at some other level of aggregation. It indicates to the researcher in marketing efficiency that he must know what he is doing and what its implications are. In this connection the importance of the constraints in the problem must be emphasized.

Importance of Constraints

At any given time the analysis of efficiency must take into account certain constraints which society through its social, political, and economic activities has agreed upon. The constraints, in effect, furnish limits and clearer meaning to the various resources and ends which go into the formulation of efficiency.

The following indicate the nature of some of these constraints:

A. Most activities which act to reduce competition are unlawful. Though imprecisely defined, this must be considered in any analysis of efficiency from the firm level up.

B. Modern technological capital is imperfectly mobile and divisible. This fact acts as a constraint on the evaluation of resources especially at the intrafirm and firm level.

C. Labor may be employed under minimum length of work week provisions. This would be a constraint in the evaluation of efficiency at the firm and intrafirm level.

D. The pure food and drug laws define certain characteristics of product output. Activities which change the nature of output of a firm or industry cannot ignore this restraint.

E. Religion dictates the distributive pattern of specific foods. This contraint would have to be recognized in efficiency studies at all levels in the affected industries.

The above illustrate the widely varied nature of these constraints. They always must be taken as given in any efficiency analysis at any level of inquiry, except when the analysis is pointed at measuring the potential effects of relaxing a specific constraint.

Illustrative Application of Concept

To illustrate the changing nature of efficiency evaluations and their implications at various levels of inquiry a specific example was worked through the model proposed above. The example chosen is a mechanized device which would sort lemons for color. Currently, hand sorting is done. Would the adoption of the mechanical sorter give increased efficiency at the intrafirm, firm, industry, and economy levels?

Several questions at the intrafirm level were considered:

(1) Is there a difference in the quality of the output of the two methods for a given input of lemons? The assumption was made that the nature of the output of the two methods was the same.

(2) Would other operations in the over-all process be affected by a change in color-sorting method? It was assumed that there was no effect on the other operations. Since the unit costs of the mechanical operations were lower, it was judged the more efficient method at this level.

At the firm level:

It was concluded that the mechanical sorter would:

A. Permit the growth in size of the adopting firm.

B. Permit the increase of profits even though the conditions under which labor was employed by the firm might mean that labor cost might not decline as much as the decline in labor input.

C. As to the ends of profit, growth, power, and survival this innovation was judged to increase efficiency.

D. As to the ends of the nature (quality) of output it would have no effect.

E. As to the ends of labor relations (acceptability of the firm), this innovation would probably have adverse effects and would not be considered to increase efficiency.

F. As to the end of reducing uncertainty, management would have to evaluate the potentiality of a still different and further cost-reducing innovation appearing in the near future and other uncertainties.

Weighing all of the above, it was assumed that the firm would judge the development more efficient and adopt it.

At the industry level:

It was assumed that such adoption would:

A. Result in fewer but larger firms in the industry.

B. Increase the uniformity of the total lemon output.

C. As to the ends of growth, increased consumer acceptability of the more uniform product would result in an increased demand for--and output of--the products of the industry. Efficiency here would be increased.

D. As to the ends of nature of regulation and organization of the industry, fewer but larger firms would dominate. Such development might bring forth more regulation, control, and possibly legal action. However, in light of public sanction of the limited character of competition in the industry, efficiency in the area would not be diminished.

In light of these considerations the development probably would be judged to increase the efficiency of the industry.

At the economy level:

At this level the results would be increased unemployment, a possible limitation on the variety of lemon choices, and increased monopoly potential. Final judgment of the efficiency results of the lemon sorter would have to be weighed against the pertinent goals of society.

Kinds of Research in Agricultural Marketing Efficiency

Since research in agricultural marketing efficiency may mean different things to the engineer, the economist, the sociologist, etc., it seems helpful to outline two major kinds of research in this area. These two are research designed to compare the efficiency of alternatives with a given state of technological development on the one hand, and research designed to advance the state of knowledge and development on the other. Although overlapping is apparent, the first is typified by economic research in agricultural marketing, and the second by engineering research in this field.

A. Research with given technological development

In this type of efficiency research the objective is to measure or improve the efficiency of resource use in achieving prescribed ends, given the state of technological development. In the definition $E = \frac{A}{B}$ this research may be directed toward (1) outlining a program to increase efficiency subject to given restraints, or (2) comparison of E's in alternative situations.

1. Programs to increase efficiency may be any one of three kinds. Greatest efficiency is obtained at the point where A is greatest taking B constant or given. Obtaining maximum profit to the firm, given its total resources and business organization, is an example.

Alternatively maximum E may be obtained by minimizing B, taking A as constant or given. An example here might be minimizing cost of performing the packaging function of a firm, given the type of packaging desired, the volume of output, and the organization of the firm.

Finally, subject to the reservations suggested in the final paragraph of this report, comparisons of relative efficiencies may be made when A and B vary simultaneously. In order to be most meaningful, this procedure requires that A and B be converted to the same unit of measure--possibly dollars or some type of index. This would be true of a study of the efficiency of an innovation which increases both inputs, e. g., cost, and output, e. g., revenue.

2. Comparison of efficiency

Comparisons of the efficiency of alternative situations at any level of inquiry also may be of different kinds. They may be (1) alternatives at a given point in time, (2) cross-sectional, (3) comparisons through time, or (4) some combination of these. Research studies of this sort are addressed to the question of which alternative situation is most efficient.

Comparisons of alternatives at a given point in time are often used to estimate the effect on efficiency of some recently developed innovation before it is actually put into use. The lemon-sorter example is a case in point. Cross-sectional comparisons are often made between large firms and small firms, between industries with differing organizational structures or differing degrees of Government regulation, between different processes within the same firm, etc. Comparison of efficiency between two periods of time also is undertaken at several of the different levels of inquiry. And finally combinations of these cross-sectional comparisons at different points in time are not unusual.

By and large, research in agricultural marketing efficiency with given technological development is clearly the field of analysis of the agricultural economist. It deals with the allocation of scarce resources among alternative ends. It deals with decision-making in the organization of economic production at the operational level. It follows research which discovers new technology, but is by no means limited to this.

B. Research with a changing state of technology

Research on ends and resources

In general, this type of research is oriented toward the development of new knowledge which will alter the restraints on A or B. For example, the choices which the manager of a firm has with respect to product composition will depend on the range within which the manager can determine his goal with respect to product composition. Likewise research oriented toward development of a new machine will permit a wider range of alternative production organizations. If the new machine permits a cost reduction the obtainable value of E will be greater for any choice of goals than was possible previously.

Research designed to improve knowledge of goals and to improve technology falls within the competence of many disciplines. Engineers, for example, may develop new products, and economists may develop new management techniques.

It should be stressed that research in these categories would be restricted to developmental research. Only those activities designed to create a wider range of ends from which to choose or to provide wider range of choices in the use of resources would be included. Once the new discovery has been made, the framework of analysis changes accordingly. The importance of recognizing this distinction lies in the fact that developmental research in marketing most often lies within the province of disciplines other than economics, whereas efficiency research involves economic considerations.

Research on ends (A's)

Some goals are of a nature which are not within the realm of usual research by persons in the marketing field. Included among these are social goals toward such ends as security and freedom. On the other hand, research may be done which is oriented toward increasing total available utility through specific measurable goals. The nature of this research can best be illustrated by the form of the A function for the firm: $A = F\ (X_1\ X_2\ \text{---}\ X_n)$ where any X may represent such individual goals as security, profit, output, composition of product, etc. Each of these X's may consist of several components. For example, X_1 may be product composition for a milling firm and be composed of many products each of which represents an alternative which the manager may consider in establishing a goal. The manager of the firm may choose to allocate resources to create a wider range of choices. He may do this because he believes a new product will result in increased profit, expanded output, or creation of other changes which will increase A. At the industry level, publicly supported research may be warranted in the belief that increasing the range of products will add to the total utility of society.

Research on means or resources (B's)

In this area research is designed to change the state of knowledge and arts through B. The B as visualized here would be a function of items such as labor, capital, and organization $B = F^f (Y_1, Y_2, Y_3 \text{ --- } Y_n)$. Capital for example is composed of items such as machines, buildings, etc., $Y = (Y_1, Y_1, Y_2 \text{ --- } Y_n)$. Research probably would not be done on capital as such, but on its components.

An example of research on an engineering development may be the lemon sorter previously described. In this example research would be concentrated at a given level of inquiry (intrafirm) to develop a more efficient method of sorting lemons.

An example of research in the economic sphere might be an effort to develop an improved method for the analysis of data.

Application in Agricultural Marketing

Research at Level of the Industry or Marketing System

Probably the most important need for research on agricultural marketing efficiency at the marketing system and industry levels is to determine ways of improving efficiency. This includes the need for measuring the relative efficiencies of the various alternatives available. In one sense of the word there are measures of both inputs and outputs of food marketing at the industry and overall levels. The U. S. Department of Agriculture provides estimates of total food marketing charges in dollars. These dollar figures may be said to measure the total value inputs and the total value outputs of food marketing services, yet they provide no measure of efficiency. If, on the other hand, there were a good index of the volume of marketing services and another good index of the volume of inputs in marketing, the change over time in the ratio of the first to the second of these indexes would give us a measure of whether and to what extent food marketing efficiency was changing. Essentially the problem of measuring the volume of output of marketing services is not different from that of measuring the volume of industrial production or food production. Indeed the output of marketing is included in the indexes of such production. What we need is to have the output of marketing separated from the total output of the various industries. When the services of the marketing system are increased--as for example when peas sold as frozen shelled peas replace fresh peas in the pod--an index of the volume of marketing services should reflect that as an increase in output. This could be done through a price-weighted chain index of volume of goods marketed, provided adequate data are to be had concerning the important changes which take place in the ways as well as the total amount of food marketings.

One reason that an overall index of the volume of food marketing services is needed is that some people are critical of the marketing system on the basis of the increase in total marketing charges or of the percent of the consumer's dollar which is absorbed in marketing charges. In the absence of an overall index of the volume of services rendered by marketing agencies some individuals are prone to assume that, on a per capita basis at least, the task of moving food from farm to retail store is essentially no greater than it was 40 or 50 years ago.

Indexes of physical inputs in marketing--man-hours, capital services, etc.--would probably be easier to construct than indexes of marketing output. A first approximation might even be to estimate the man-year equivalent of total marketing charges.

It should be recognized, of course, that indexes such as those suggested above would have severe limitations. The outputs would include only the market system's outputs of goods and services. The indexes would not measure such things as security, freedom, and stability (save that the indexes would themselves indicate some measure of stability or instability).

There are other possibilities of partial measures of other aspects of industrywide or overall marketing achievements. Changes in various qualities of food reaching consumers are subject to various measurements. These include changes in protein, carbohydrate, and vitamin content. It is also possible to measure the extent to which food produced on the farm fails to reach consumers, whether through not being harvested or through loss and spoilage in market channels.

In keeping with the definition of efficiency as set forth here, there are important opportunities to measure the effectiveness of an agricultural industry or the marketing system in achieving acceptable competitive norms. Relative efficiency is gauged in terms of proximity of observed performance to the various criteria of the ideal market or market system. In many instances, however, some of the criteria are identical for widely differing competitive contexts. As a consequence there is need for evolving criteria with respect to competitive context which are unambiguous and meaningful. Only with such criteria can appraisal of the effectiveness of the marketing system in its allocative role rise to the desired level of objectivity.

Other problems related to the competitive context of the marketing system and its efficiency are even less susceptible to identification and measurement. Consider the question of whether and how much consumers can, via the pricing system in our present markets, register their relative preferences for added services purchased with food products. Does the imitative character of competition in our food-market system lead to such rapid replication of service innovations as to prevent clear expression of consumer preference? If so, the immediate market response to merchandising innovations may be misleading in regard to total consumer preference or the price advantages to marketers. Consider, for example, the rapid growth of discount houses in nonfood retailing in recent years. While the existence of fair trade or resale price maintenance laws was a conditioning factor it is nonetheless true that such growth came about by providing lower prices and few services to consumers. Since this development occurred during a period when the trend in food retailing was toward providing more--and costly--services it suggests the need for a careful scrutiny of the presumed demand for more services in food marketing.

Research at Level of Firm and Intrafirm

Within a given firm the efficiency concept can be applied profitably in studies of specific operations with the aim of reducing average unit costs, improving quality of product, or improving the efficiency and earnings of labor. Studies of overall plant operations can be made which will indicate the technology in each operating stage which in combination with techniques used in other stages, will result in least total cost for a given output. Such studies can also reveal possible reductions in average unit cost as scale of operation in a given plant is increased.

Useful research at the level of the firm includes: Determination of the optimum size, number, and location of plants in relation to the total costs of product assembly, processing, and distribution; studies of how volume and composition of product and merchandising practices such as advertising and packaging affect sales, total revenue, and costs; and analyses of the terms and conditions pertaining to the use of various resources such as labor, and the resulting effects of these terms and conditions on the costs of various resource combinations to produce a given output.

Central to the deliberations of this committee has been the formulation of the concept of efficiency as the relationship between resources used and ends achieved. The usefulness of this concept measuring average efficiency as compared with measures of total and marginal efficiencies remains open to further exploration.

Report of Work Group II

ASSEMBLY AND PACKING OPERATIONS AT COUNTRY PLANTS

Members of Work Group

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Introduction

Our group limited its discussion to the various economic and engineering aspects of efficient utilization of labor and equipment for conditioning, handling, and preparing agricultural products for markets in country point packing houses. Methods were discussed as how best to obtain and disseminate answers to problems confronting operators and users of these establishments. Reducing marketing costs through improved work methods, substitution of equipment for labor, and efficient plant layout and design were discussed. Consideration was also given to estimating economies of scale that may be associated with assembly and packing operations of country plants.

Research Problems

The group agreed that assembly and packing costs might be reduced by:

(1) Increasing operational efficiency of plants under existing conditions without addition of new equipment or changing scale of operation. This may include reorganization of handling methods, work crews, and plant layout.

(2) Substitution of new work methods, new equipment without changing the scale of plant. The selection of the least-cost combination of equipment and labor necessitates the consideration of the development and experimenting with new equipment and new techniques to perform the assembly and packing functions.

(3) Changing scale of plant. The determination of the relationship between operational costs and scale of plant involves the synthesis of the least-cost labor and equipment combination into "model" plants of varying output capacities and the comparing of costs of different sized plants.

The type of research required to reduce these marketing costs will depend to a large extent upon the particular nature of the problem and the objectives desired. The group concluded that the determination of the least-cost combinations required some type of engineering approach. The engineering method of determining a cost function consists of a systematic determination of what cost output relationships ought to be when the relevant factors are considered. The difference between the engineering approach and the cost-output approach used by some economists can be shown by the variables used in the two types of study. In describing the process of production, both disciplines study the quantity and price of the factors of production used to yield a given output. However, beyond this point the approach is somewhat different. The engineering approach first selects the inputs to be used and then the quantity of each, using prices as the parameters to be held constant throughout a specific part of the analysis or the entire analysis. The economic cost-output approach is usually concerned primarily with the effect of varying prices upon production combinations. Therefore, each quantitative variation in the factors of production is treated separately in order that each may have an individual price. The results from this type of procedure hold only so long as the discussion remains on an abstract level and becomes difficult to apply in analyzing a dynamic production process.

An engineering study usually builds up its data in physical units, i.e., man-hours, equipment-hours, electric power, fuel, boxes of fruit, pounds of material, etc. These physical units are then converted into costs at an assumed or current price. These data provide a quantity of observations which can be used to estimate empirical cost-output functions.

Research Methodology

Consideration of the methodology used in studies of assembly and packaging operations involve: (1) Sources of input-output and price data, and (2) procedure used in analyzing and applying the data in solving the type of problems listed above. Principal sources of data are plant records, direct engineering observations, manufacturers of equipment, engineering estimates of building costs, previously published standard data, and technical data from the physical and biological sciences.

Accounting Records

Plant accounting records provide information that may be useful in comparing levels and variation in costs among plants, in establishing input-output relations for some operations, and in serving as a partial list of reliability or "realism" of standards estimated through engineering study. In addition, they may also be virtually the only source of data for some items of cost such as administrative costs and miscellaneous expenses. Limitations of this source of data are: (1) It does not provide a basis for comparing relative efficiencies of alternative methods of operation since the records usually will not reveal detailed information regarding work methods, delays, and idle work time; (2) detailed labor records, while useful, may often contain questionable or uncertain classifications; and (3) reported fixed costs reflect variation in purchase dates and rates and methods of depreciation.

Direct Observation

Direct observation involves the use of engineering technique such as job description, time study, production study, motion study, and work sampling.

Job description consists of detailed descriptions of the duties and methods of performing the various jobs in the plant. It is necessary for interpretation and application of data obtained by more detailed studies and in some cases may itself provide a broad base for determining input-output relationships.

Plant process flow description involves the determination of the nature of the flow of products and materials through the plants. It is a necessary supplement to other data and provides a basis for analyzing and improving the plant processes.

Time study involves stop watch measurement of the detailed elements of various plant labor operations. It provides data needed in analyzing and improving work methods and in determining standard labor requirements for various methods of performing the operations. A disadvantage of this procedure is that usually only a few workers and a fairly short period of time can be studied. Rating or leveling procedures which tend to reduce these disadvantages also contain several limitations. The concept of a "normal" is subject to variation in interpretation among observers and among plants. However, trained and experienced observers may achieve a fairly high degree of proficiency in estimating levels of worker activity.

Production study is essentially the same as time study and is used to obtain basis time requirement for jobs subject to irregular elements or cycles of elements.

Motion study is concerned with analyzing motions involved in performing operations and may be used with or without time study. It is useful mainly in improving work methods. Micro motion study is an extension of motion study to very fine and detailed elements of operations.

Work sampling consists of sampling workers' activities through time. It is used to determine the proportion of workers' time that is idle or spent on various activities. When related to the flow of products and materials it provides information on input-output requirements and utilization of labor. This technique is very useful in studying operations performed by crews of workers.

Manufacturers of Equipment

Equipment manufacturers provide the principal source of data on prices of equipment. They also may provide some information on labor and operating requirements, maintenance requirements, and equipment life. Some care is required in using the information. Effective capacities may be overstated, list prices may be subject to discounts, and estimates of life and maintenance requirements may be uncertain. However, in some cases manufacturers may be the only source of such data.

Engineering Estimates of Building Costs

Engineering estimates of building replacement costs involve detailed specifications of the physical quantities of materials and labor used in constructing specific types of buildings. Application of appropriate price data (obtained from manufacturers of materials and contractors) provides estimates of replacement costs for the given price level used. Estimates of building life are obtained from engineering experience, contractors, and to some extent from plant records.

Previously Published Data

A considerable amount of data useful for plant analysis may be obtained from published sources. These fall into four classes:

(1) Standard time data. These data permit estimates of operation time requirements through detailed description of the very elemental operations and movements required to perform a job. This involves specifying such things as hand and finger movements, types of grasp, and so on.

(2) Basic operation times. Time requirements for performing basic operation determined in one study may have application in other studies dealing with different plants or commodities. For example, times required to transport materials by hand trucks may be about the same for one commodity as another, given the distance and general types of containers involved. In many cases, minor modifications may permit the application of results of previous studies to new areas.

(3) Descriptive material. Descriptions of technologies and the operations in particular types of plants may be useful in further study. They provide an insight into the nature of operation and give indications of possible improved methods that might be used.

(4) Statistical data. This category refers to the broad body of secondary data available mainly from governmental and industrial sources. It is useful mainly as a source of information about industry characteristics and in evaluating and extending the results of the plant analysis.

Physical and biological sciences

A considerable amount of data must be obtained from and in consultation with workers in the physical and biological sciences. This involves consideration of factors such as the impact of production techniques upon quality, physiological aspects of storage, and the nature of chemical or other technical processes and their relation to costs and output.

The specific procedure used to analyze and apply the data to the solution of problems depends in large part on the particular nature of the problems and the objectives of the research. The research may be concerned with improvement of existing work methods, development and testing of new methods, comparison of costs of existing methods, determination of cost functions for individual plants or, more broadly, the relation of costs to scale of operations and the possibilities for industry reorganization and improvement. A complete analysis, of course, involves consideration of costs of assembly and distribution as well as in-plant operation.

Procedures involving the development of basic input-output standards for alternative methods and synthesis of these into broader relations appear to be the most effective method of analysis. However, the use of statistical techniques to determine over-all plant cost relationships should not be overlooked, particularly for the broader aspects of study such as the determination of economies of scale.

Presentation and Adoption of Results

One of the problems of economic-engineering research work is that of getting industry to adopt the improved techniques. An important reason for this is that the researcher often fails to present his findings to extension workers and to industry people in a form that is interesting and usable.

One approach to solving this problem is to have a closer working relationship between extension and research personnel. It is suggested by the group that the extension and service workers be consulted during the planning stage of a research problem and be kept informed of progress. It is recommended that extension workers should be given an opportunity to become familiar with the research techniques to be employed in the collection and analysis of the data. In addition the extension worker might contribute to the project by assisting the research worker in obtaining industry cooperation during the planning and data collection period. The working together during the planning, collection, and analysis stages should result not only in greater use of the research results but also in the solution of more problems that may reduce assembly and packing costs at the country plants.

Report of Work Group III

THE ORGANIZATION, OPERATION AND DESIGN OF COUNTRY LIVESTOCK AUCTIONS

Members of Work Group

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Introduction

Work Group III considered the problem of increasing the pricing and operating efficiency of livestock auction markets, in view of their seemingly inefficient structure at present and the apparent pressure towards further inefficiency. It appeared that there are too many low-volume high-cost auctions with inadequate facilities and inefficient methods of pricing and assembly of livestock. At the same time, there is a demand by producers and local business interests in many localities to develop new auctions.

The discussion was divided into three phases: (1) The first general area discussed was the process of decision-making in solving a local marketing problem and determining the need for a new auction facility, remodeling an existing facility, or reorganizing the existing structure of auction markets; (2) the second area considered was the procedures for implementing the decisions and an evaluation of the important factors which should be considered in implementing a decision to solve auction marketing problems; and (3) the third area to which considerable attention was given is establishing and improving market news and grading in order to increase the efficiency of pricing at auction markets and to develop the ability of producers to better evaluate their livestock and make better marketing decisions.

The work group centered attention upon livestock auctions. Although operating practices and arrangements of tobacco and other commodity auctions were discussed, the primary concern was with analysis of the problems of livestock auctions. In this analysis the group drew to some extent on the principles and practices employed in other commodity auctions.

Summary

The auction market has served an increasingly important role in the livestock marketing structure. The phenomenal growth of community auctions during the past two decades indicates that many producers prefer the auctions as a market for their livestock. Available information indicates that the volume of livestock sold at country point auctions will continue to increase if auction operators satisfy the producers' demand for services and improve the pricing and operational efficiency.

The small livestock producer has benefited greatly from the development of the auction market. Previous to the advent of the auction the small operator was faced with considerable expense in shipping small lots to a terminal market or the disadvantageous sale usually offered by a country dealer, and inter-farm trading was impeded by a lack of market. The auction provides a market where an operator can observe the sale of his livestock sold through a process of open bidding. The auction has functioned reasonably well in the primary assembling of livestock and as a source of supply to local slaughterers and stocker and feeder buyers.

That the existing structure presents many serious problems to the efficient operation of auction markets is indicative that auctions have not escaped the growing pains associated with a new industry. In order to realize a relatively efficient development of auction markets, improvements will have to be made in operating practices, facilities, and in many localities, in the organization of auction markets. These problems are already receiving the serious attention of livestock producers and auction operators, as well as State and Federal extension, research, and regulatory personnel.

Work Group III was concerned by the fact that dissatisfaction with an existing inefficient auction commonly creates pressure to build another auction. Thus, the efficiency of marketing is often decreased by the creation of additional auctions in areas that already have too many high-cost low-volume facilities.

Research and extension personnel can be most useful in assisting the various interested groups to determine the need for new auctions and how to achieve the optimum efficiency of facilities.

In the first section of the report the work group developed a process of determining the need for a new auction and some useful procedures for solving a local auction marketing problem.

The second section of the report deals primarily with questions of location and increasing operational efficiency through the better design and arrangement of facilities. There was no thought by the work group that improved facilities or more efficient structure of markets would prevent unethical practices of irresponsible operators. There is considerable need for the legitimate livestock auction industry to take further steps in order to develop and maintain the confidence of producers and buyers.

Adequate market news and effective grading are prerequisites for any efficient system of marketing. Market news coverage of livestock auctions is still in an embryonic stage. The problems of providing a market news service including the possibility of sampling are reported in section three. Some States have experimented with methods of sampling of auctions and other States are having market operators report prices. Until market news is expanded, livestock producers are likely to continue to suffer from inadequate price information. Although the work group did not have time for adequate discussion of grading, several of the problems were discussed relating to the development of grading standards and organizing an educational program to inform producers about grades and problems associated with marketing graded livestock.

Section I

I. The Process of Decision-Making in Determining the Need for a New Auction Facility or Reorganization of an Existing Auction or Auctions

Personnel engaged in marketing research, extension or regulation are often called upon to help solve particular marketing problems. Although the work group concentrated on how the various agencies might assist in solving a livestock auction marketing problem, the process of decision-making and the procedures developed below may be applicable to solving the marketing problems of other commodity auctions. The consensus was that many times decisions were made before the problem had been adequately identified or possible alternative solutions fully explored. Therefore, attention was focused upon the process and procedures necessary to adequately investigate the livestock marketing problems at country points and arrive at the best possible solution.

A. Isolating the Problem - Determination of the real and felt needs of producers and the reasons for their dissatisfaction with the existing marketing structure and practices are of primary importance. Commonly, dissatisfaction arises for one or more of the following reasons:

1. Low prices
2. Unfair or unethical operating practices
3. Inefficient facilities
4. Lack of adequate information and knowledge
5. Inadequacy of regulations or their enforcement

B. Involvement of All Agencies - In the preliminary phases of market development it is of particular importance to involve all agencies and groups who are or will be concerned with the process of decision-making.

1. The cooperation of all interested is important for two reasons:

    a. To render a balanced judgment upon the problems and decision
    b. To secure their participation in and support of the final decision

2. Conferences should be held with and between groups of:

    a. Livestock producers
    b. Livestock buyers
    c. Livestock truckers
    d. Managers of marketing facilities
    e. Local and national packers
    f. Local businessmen
    g. Personnel from the:

        (1) State Departments of Markets
        (2) State Experiment Stations
        (3) Extension Services

C. Establishment of a Steering Committee - A steering committee should be organized with as many interests represented as possible. The major responsibility of the steering committee should be:

1. To guide the investigation
2. To evaluate and make the decisions
3. To secure the support of all groups in the final decision
4. To determine the best means to implement the decision

D. Techniques of Analyzing the Problem - Several types of research are needed to evaluate adequately the problem and determine the best possible solution. Of particular importance is the sample survey of both producers and buyers.

1. A preliminary study should be made from available data of the annual and monthly marketings within the expected maximum and minimum area to be served by the market.

2. A second phase of research is to examine the efficiency of existing market outlets. Examination should be made of:

    a. The pricing process
    b. The level of prices
    c. The volume of marketings
    d. The adequacy of physical facilities
    e. Marketing charges and costs
    f. The relative strength of existing competitive outlets located both inside and outside the supply area

3. A well designed sample survey of producers in the area to be served by the proposed facility should be made to obtain:

    a. An accurate measure of producer dissatisfaction with present marketing outlets
    b. A measure of their desire or intention to change to a new facility if it were available
    c. A measure of producers' resistance to change marketing practices
    d. An estimate of the volume that could be attracted to a new market or a reorganized facility
    e. A measure of the distance producers are now transporting their livestock to market
    f. A preference of producers with regard to location of their marketing facilities

4. Buyers now operating in the supply area and potential buyers who might buy in the area should be contacted to determine:

    a. Their willingness to utilize a new facility
    b. The conditions under which an adequate number of buyers would utilize the market
    c. The possibility of seeking commitments of buyers to utilize the facility
    d. Buyers' preferences with respect to the location and design of facility

5. A final phase of research should be an historical appraisal of the dynamics of production, processing and marketing patterns from the standpoint of the national, regional and local market and supply areas. Particular attention should be given to current and prospective changes in:

    a. Consumer demand
    b. The supply of different specie and grade of livestock
    c. Processing technology
    d. Transportation technology and rates
    e. The pattern of location of processing and storage facilities

E. Preparing Alternative Solutions and Choosing the Best Possible Solution or Solutions - The final stage of the decision-making process is for the steering committee to evaluate the possible solutions to the marketing problems. The possible alternatives may be:

1. Construction of new facilities
2. Buying and renovating old facilities
3. Buying out several facilities and establishing a coordinated management over several facilities which would attract an adequate volume
4. A decision by the present market operators themselves to increase the pricing and operational efficiency of present market facilities
5. Development of new regulations to prohibit unsound, unfair or unethical practices
6. Development of market news, grading, and educational programs to enable the producer to better evaluate his product and make better marketing decisions

Section II

I. Procedures for Implementing the Decision and an Evaluation of the Important Factors Which Should Be Considered in Implementing a Decision

After the steering committee and the interested groups have evaluated the marketing problems and decided upon the best possible solutions, the participants are faced with the problem of how to implement the decision. This section of the report is confined to the procedures and important factors which should be considered in: (1) construction of new facilities, (2) buying and renovating old facilities, (3) buying out several facilities and establishing a coordinated management over several facilities. Of the other three possible solutions suggested under E above, only number six, "The development of market news, grading and educational programs to enable the producer to better evaluate his product and make better marketing decisions," was discussed by the work group and this is reported in the third section.

A. Area of Service - An estimate must be made of the size and shape of the potential supply area. Factors to consider are:

1. Distribution of livestock
2. Distances producers habitually transport commodities
3. Supply areas of other facilities

B. Type of Service - In order to fully utilize capital and labor, all possible uses of the auction facility should be considered and should include:

1. All species of livestock
2. Related economic enterprises associated with auctions
3. Supplementary uses for facilities

C. Estimating the Expected Volume - After a decision of the supply area the volume that could be attracted must be estimated on the basis of:

1. Number of livestock in the proposed supply area
2. Volume that can be competed away from existing facilities or drawn from possible additional production

D. Choosing the Market Center - In choosing the market center, factors to be considered are:

1. Present highway and railroad facilities
2. Proposed highway development
3. Volume and direction of current flows of livestock
4. The largest trading center at which producers are trading or will be trading
5. Location of other marketing outlets with the objective of avoiding spatial competition
6. The geographical center of the supply area to minimize the distance livestock must be transported between the largest number of producers who would patronize the market and the market facility

E. Choosing the Site in the Market Center - The factors to consider in choosing the site are:

1. Highway accessibility from all parts of supply area and to processing outlets
2. Sufficient land for parking as well as operation and the relative cost of the site
3. Proximity to wholesale or trading facilities which can provide return loads for truckers
4. Avoidance of public nuisance claims
5. Adequacy of water supply, sewage disposal, and drainage characteristics

F. Amount of Facilities - The factors to consider in determining the size of the facilities:

1. Relationship of roofed area to pen area. It is recommended that 75 percent of the pen area be covered by roof.
2. The relationship of peak volume to seasonal climatic considerations
3. The capacity of competing market outlets
4. The development of the basic design to allow for inexpensive expansion

G. Principles and Suggestions for Increasing Efficiency of Land, Labor, and Capital Through Better Design, Arrangement of, and Equipment Used by Auction Facilities

1. Barn and Pens. Several recommendations regarding the design of barn and pens are:

   a. The numbers and the relative heights of loading and unloading docks should be based on a survey to determine percentage of trucks of each type loading and unloading at present or comparable marketing facilities.
   b. Where feasible, unloading and loading dock facilities should be level with pen floor.
   c. Gates should swing with the flow of livestock and be hung to "funnel" livestock into and out of pens with a minimum of animal movement.
   d. The recommended size of pens is 12' x 24' for cattle and 12' x 12' for hogs. All pens should have additional gates within the pens in order to make smaller units when necessary.
   e. Adequate "cutting" chutes should be provided for all kinds of livestock expected at the market.
   f. Concrete floors and watering troughs should be installed for hog pens.
   g. "Buyers" pens for regular buyers are recommended.
   h. Running water and feed facilities should be included in some pens.
   i. The roof should be placed at sufficient elevation to allow for ventilation and light for inspecting animals in pens.
   j. Alley pens versus alleys and pens in part of the pen area between the unloading and sorting area and ring may cut labor of handling larger lots.
   k. In order to facilitate unloading and loading operations, the areas for loading and unloading should be separated.
   l. Scales should be located at sales ring entrance. Scale beams and scale ticketing operation should be accessible to buyers and sellers.
   m. Where 2 scales are used, one should be small to speed the weighing of single animals.

2. Sales Pavilion. Three major principles controling the size, shape, and type of the ring in the sales pavilion are:

   a. Regular buyers should be as near the animals and the auctioneers as feasible.
   b. Ring and pavilion construction should maximize buyer vision and minimize the danger from loose animals.
   c. Physical arrangement should minimize manpower requirements and maximize the speed with which animals are moved into, through, and out of the ring.

In order to apply the above principles, the following suggestions are made:

a. The half moon ring is considered best arrangement to maximize buyers' vision and communication between auctioneer and personnel.
b. The normal radius of half moon style ring should not exceed 20 to 25 feet.
c. Pipe, cable, or chain on steel pipe post in concrete maximize both vision and protection.
d. Buyers' seat location should not be obstructed by aisles and should be as near ring floor level as feasible. Buyers' seats should be located so in seated position eye level is comparable to standing on ring floor.
e. Ring lighting should eliminate shadows and distortion. A combination of direct and indirect lighting can be used to advantage.
f. The sales ring should be insulated against noise from pens.
g. Provision should be made for adequate temperature controls in sales ring area.
h. Permanent seating capacity need not exceed 150 to 200 for most local auctions. Standing room or temporary seat capacity may be provided for special occasions.
i. Posts, boxes, or other protective devices should be provided for ring personnel.

3. Office and Public Rooms. Recommendations regarding location and type of office and public rooms:

    a. The office should be on the first floor and convenient for buyers.
    b. The office should be insulated against noise from the ring pens and lobby as well as conversation.
    c. A teller window is suggested to cut down unnecessary interruptions for office personnel.
    d. Office should be well lighted and if feasible located on the windward side of pens.

Section III

I. Market News A Prerequisite to the Efficient Pricing at Auction Markets

The greatest obstacle to efficient pricing at auction markets is the lack of the collection and dissemination of market news. Without reliable and meaningful information of prices and price trends at various markets, the producer is unable to make a rational choice of the time and place of marketing. Federal Market News Service for livestock prices is confined with a few exceptions to terminal markets. In some States prices at a few auctions are reported by State agencies. The wide variation in the volume of livestock sold at local auctions, the once-a-week type of operation, and the distance between auctions makes market news reporting a difficult and expensive operation. The work group recognized this in its discussion of the possible methods of market news coverage that can be utilized when budgets are limited.

A. Purposes and Objectives of Market News - Price information relating to daily, weekly and seasonal market conditions is useful to:

1. Producers to aid in making rational decisions as to time and place of marketing their product, and to more nearly equalize the extent of knowledge and hence bargaining power of producers with that of buyers.
2. Buyers in choosing when and where to exert their buying power.
3. Producers, packers, research and extension workers in studying market relationships in order to make useful interpretations of price trends.

Detailed data may often be most useful to producers when interpreted by research and extension workers in terms of levels of prices and changes in those levels. Many producers do not have the training necessary to translate the price ranges of several grades and weights into meaningful tools for determining where and when to sell.

B. Methods for Collection of Prices - Prices may be collected and tabulated as ranges or as averages of every transaction at one or all markets, or the "general tone" of the market may be reported.

There is an infinite variation possible between the two extremes of the reporting and summarization of all prices and of merely comparing the strength of one day's market with a previous day. In reporting livestock prices a less intense and wider coverage is preferable to a detailed tabulation of prices on one or two markets.

When funds are limited professional market news reporters may be concentrated at a few representative markets. All other markets can be covered by hiring part-time correspondents. The accuracy of the part-time correspondents reports can be maintained by supervision and spot checks by professional reporters. Collection of prices must be accurate and reliable which generally requires that the person making the report have no interest as a buyer or a seller in the market. It may often be possible to secure cooperation of auction operators in the collection of market prices and volume, and in the formulation of collection procedures.

Many operators think it advantageous to have reports of their market published or broadcasted. They may be willing to collect the data themselves and send them to the market news office by telephone, wire or mail. Reliability is the main determinant of the feasibility of this method of collection of prices.

It is desirable that a scientifically designed sample be used where 100 percent coverage is impossible because of budgetary limitations. In selecting a sample consideration should be given to:

1. The differences in grading procedures and classification
2. Volume sold
3. The number and type buyer attending the sale
4. Other trade customs and institutional factors

In collection, a uniform procedure and defined standards are necessary for comparability of results between markets.

C. The Applications and Knowledge of Grades for Interpretation of Market News - Meaningful interpretation of market news is a direct function of the application and knowledge of grades. Unless the wide heterogeneous range of quality of livestock is classified into more homogeneous groupings, price reporting for livestock is likely to be meaningless to producers. Interpretation is impossible unless the data are presented in a form which the producer can relate a price easily and quickly to what he has to sell.

Care is necessary in deciding what price or price range will represent the market condition. Too wide a range is meaningless, and a single price may be unrealistic and creat disappointment. Prices must be classified on a basis of grade, but the producer must be able to relate the grade of his product in the terms used in the reports. There is a lack of understanding of grading by many livestock producers. Hence, there is little basis for comparison as between reported prices and his particular animals. In order to obtain an effective interpretation of market news there should be:

1. Sale by objective grades and weights
2. Education of livestock producers on market grades
3. Translation and explanation of market terminology for producers

Report of Work Group IV

IMPROVING STORAGE AND TRANSPORTATION AND MAINTAINING QUALITY OF GRAIN AND OTHER COMMODITIES

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Introduction

Discussion of the topics assigned to this work group cannot logically be limited to a specific commodity, function, or proposed field of activity. Just as the problems which concern one commodity might be similar to another, so might there be an absence of a line of demarcation among those agencies whose responsibility it is to work toward the solution of the problems. With this in mind, our handling of the subject, both in meetings of the group and in preparation of a report, was to consider situations, problems, and solutions under the broad headings of quality and operational facilities.

Quality

The maintenance of quality during the marketing process is receiving increased attention, from the viewpoints both of protecting the public welfare and of minimizing the financial loss to owners. Considering the physical, chemical, histological, and biological factors, the clean grain program seems to be receiving the greatest current attention due to the increased activity of the Food and Drug Administration on wheat sanitation. Also, during the recent years since large quantities of grain are being held in storage for perhaps 3 or 4 years, the importance of the problem of quality maintenance has increased.

Insect Damage

Entomological factors are of importance in all phases of transportation, storage, and maintaining the quality of grain and other agricultural commodities. Most agricultural commodities are subject to insect attack and contamination from the time they are harvested, through transportation and processing, and in all marketing channels up to the time of use by the consumer. There are 8 or 10 major insect pests of stored grain and other commodities that must be dealt with, in addition to 60 or more species that may be encountered occasionally or that are minor pests.

Furthermore, it is poor economy to let insects damage, destroy, or lower the quality of commodities after making the sizable investment in production that is required for farm equipment and labor, control of insects, diseases, and weeds in the field, fertilizer, crop culture, soil preparation, and plant breeding. Quality maintenance is not possible unless insects are properly dealt with. We prefer to approach the insect problem from the standpoint of prevention rather than control. It is better to prevent insect attack and thereby avoid losses from damage and contamination than to wait until infestation occurs and then control the insects. In the latter case we only add the dead bodies of the insects killed to the deleterious condition already brought about by insect activity. Then there is a cleaning problem. The Food and Drug Administration has emphasized that they want clean rather than cleaned foods and raw products. The prevention of insect damage and contamination is important not only for raw agricultural commodities but for processed foods and commodities as well.

Measuring Insect Infestation

Present grade standards for measuring the quality of grains are inadequate with respect to recognizing or indicating degree of insect infestation. It is true the "weevily" grade notation takes cognizance of the presence of live insects. Dead insects are ignored, as are also those insects living within the kernels and comprising the important and dangerous so-called "internal infestation." There is a need for a simple, rapid, and accurate method of detecting this internal or hidden infestation.

Methods of Controlling Infestation

Research has demonstrated the effectiveness of the following procedures for preventing or controlling insect infestation in farm and warehouse-stored grain:

(1) Good sanitation--cleanup of storage area to eliminate sources of food supply for a latent insect infestation that would start an infestation in the clean commodity when stored.

(2) Proper storage--as dry, weather-tight, cool, rodent-proof, bird-proof, insect-proof as possible.

(3) Application of a residual insecticidal spray to the empty grain bin, storage area, or warehouse bay to control latent insect infestation already present or aid in preventing insect invasion after commodity is placed in storage.

(4) For wheat and certain other grains, the application of a protective spray or dust to the grain when it goes into storage, or fumigation shortly after binning to eliminate insects.

(5) Frequent inspection during storage to be sure of condition of commodity and determine when fumigation or other control measures may be necessary.

(6) In warehouse storage, application of periodic aerosol or mist spray treatments as a preventive maintenance operation; and

(7) Protective packaging for commodities to protect them against insect infestation during storage and transportation, including a consideration not only of tighter or better packaging, but also the use of insecticidal or repellent coatings on the containers.

Processing Plants

These plants usually have insect problems which must be dealt with. Some insects infest the plant itself and must be controlled to maintain sanitation standards and prevent contamination of the product. Other insects infest the raw commodity and must be removed during cleaning and processing stages. Precautions must be taken to keep insects and their eggs out of the product when it is packaged. The container should protect the finished product against insects until it reaches the consumer through various stages of storage and transportation, as well as in wholesale and retail channels.

Need for Extension Work

There is urgent need for more extension work to carry to the field the recommendations which research work has established. The Food and Drug Administration's recently announced minimum requirement for insect infestation in wheat (less than two percent of kernels visibly damaged by insects) will require more vigorous use of insect control measures all along the line, in transportation as well as in storage. If similar requirements should be put into effect for other grain, the need will be still greater. Also, there is need for immediately establishing and disseminating information relative to official sanitation standards for all grains used as food.

There is also a continuing need for State service agencies to recognize serious infestation and take appropriate action. A current example of this need is State cooperation in the quarantine of the Khapra beetle.

A specific example of a problem on the maintenance of quality can be found in the handling of domestic rice. Farmers in the southern rice growing States have been faced with providing adequate storage and drying facilities for an expanding rice production. This problem has become more acute as a large proportion of the 1954 crop was placed in storage under the Government loan program instead of moving into the normal channels of trade.

The method of harvesting and storing of rice differs from other cereal grains for the following two reasons: (1) Rice must be harvested with a moisture content of between 18 to 24 percent, in order to obtain a high yield of head rice, which necessitates artificial drying before it can be stored safely; and (2) rice is milled and prepared for market in the production area and does not move to terminal warehouses for storage. This requires that local storage facilities be large enough to accommodate total production.

Local commercial storage and drying capacity was inadequate to care for the 1954 rice crop. Farmers were forced to provide on-farm facilities for much of their rice. Many farmers installed aeration system using unheated air without sufficient data on the mechanical and economical feasibility of this equipment. These farmers were faced with an insect control problem of which they had insufficient knowledge and experience.

These problems point up a large area where research data are needed. Some of the key needs are:

(1) Research data as to the relative economy of the storing and drying of rice on the farm and at commercial facilities.

(2) Continued and expanded research on the feasibility of using heated and/or unheated air in the on-farm drying of rice.

(3) An adequate on-farm insect control program and determination of its costs.

When the answers to these problems become available there is urgent need for a good extension program to bring them to the farmers.

Numerous environmental factors affect the milling properties of wheat and baking properties of flour, several of which deserve increased attention. For example, it is not definitely known to what extent wheat is damaged by prolonged storage, or by artificial drying. Also the question arises as to whether current storage and drying practices are adequate for the prevention of development of "sick" wheat or the incipient deterioration prior to the onset of observable "sick" wheat symptoms. Furthermore, we need to know more about the extent to which the incipient deterioration of wheat prior to the "sick" stage affects the baking characteristics of the flour.

Studies of the complex equilibrium relationships between moisture content and relative humidity of surrounding air are being conducted by USDA on corn and wheat in an effort to make possible the use of relative humidity measurements as a quick means of predicting storing condition in terms of safety against mold formation and other storage deterioration factors. It is understood that the University of Minnesota is continuing its studies on direct relationship of growth of mold on grains, having already established the fact that most molds require a minimum relative humidity of 70 or 75 percent for growth. Continued research is needed to determine practical temperature limitations and other related physical factors in artificial drying of grain to prevent irreparable damage to this commodity for commercial processing, feed, or seed use.

Problems involved in the measurement of quality in grain are highlighted by the situation with respect to wheat. United States wheat is being discriminated against in the world market because of the poor quality which is being shipped abroad and because our grade standards do not recognize the ultimate value, baking quality, in wheat. The present standards do not provide an incentive for the production of desirable milling and baking wheats, nor for the maintenance of quality after it leaves the farm. Also, they do not permit either domestic or foreign trading on a universal grade certificate basis, and they have resulted in huge stocks of low quality wheat being held in Government storage at a price which precludes movement into feed grain channels.

The wheat situation indicates an urgent need for the revision of grade standards, which in turn presents problems in the further development of techniques of measurement, such as: simple and rapid tests for determining bread baking quality, damage and deterioration, hidden insect infestation, milling quality, moisture content, and oil content; also, the need of a basic method of moisture content determination. Recognizing that contamination from bird, rodent, and insect debris is undesirable in wheat, it is suggested that these factors also be considered in any revision of standards. In the absence of desired standards, the adoption of which should provide an adequate incentive for the production of high quality, farmers are inclined to plant those varieties which are most likely to yield the greatest number of bushels per acre and the highest weight per bushel since this is the basis on which they are presently able to realize the greatest return, either in the open market or through Government loan.

It appears that solutions to some of the above problems are in sight. Considerable work has been done on the development of tests for proposed grade factors, such as the Zeleny sedimentation test for baking quality, fat acidity test for deterioration in grain, Karl Fischer test for moisture content, the dielectric method for determining oil content, and others. However, further research and field testing is needed. There is an urgent need for expanded varietal research as well as extension activity on adapted and desired varieties, and utilization of practical sanitation procedure. In an effort to encourage the planting of high gluten wheats, it is also urged, to the extent that it may be practical, that price support loan rates reflect the ultimate value.

Operational Facilities

The large quantities of CCC grain held in private elevators for long periods of time have increased the problems of quality maintenance. Previous research in the conditioning and preservation of grain in farm bins has suggested methods of mechanical ventilation and insect control which can be adapted to these larger structures.

Further research along these lines should be conducted, including the methods that may be necessary if corn picker-shellers become practical and result in a flood of wet shelled corn to elevators at harvest time similar to the situation created by the use of the combine with wheat.

In recent years several hundred million bushels of CCC grain have been added to the normal stocks of privately held grain. Additional storage space is needed, and the problems of the most economical type, size, and location of storage structures have become important.

Previous research work with wheat indicates that it can be stored in local elevators, in most cases, at a lower cost than in farm bins, with costs being still lower at bin sites if the grain is held for several years. The chief reason for the high costs on farms is the small size of the typical farm storage structure. If the grain is not forced out of position, storage may be even cheaper at terminal elevators, especially when costs of quality deterioration are considered.

What is the best geographical distribution of storage facilities for grain? This involves complicated questions of freight rates, handling charges, changes in the direction of movement of grain from year to year, relative size and frequency of variations in production in different parts of the country, etc. Research on this problem is only beginning. More needs to be done.

In addition to this applied research, more basic research is needed; in microbiology, to reveal more about molds and other organisms, in chemistry, to reveal more about the processes of deterioration in grain, and in entomology and other basic sciences. This is the sort of research that uncovers new methods for dealing with practical problems.

Many of the problems in the field of transportation result either directly or indirectly from the trend toward increased use of motor carriers rather than rail facilities for movement of farm products, including grain and its products. This trend likely is developing because of the lower rates, faster service, and more adaptable equipment which truckers are willing to provide.

There are several observable and anticipated results of this situation. One of these is the by-passing of historical concentration points, some of which have been serving as price-making markets. This development further results in the need for modified techniques of grade determination, relocating storage facilities and perhaps an expanded and intensified market news service.

The question also arises as to the importance of railroads to our national economy. If their contribution is and will continue to be vital, then there is need for improvement of rail facilities and services, and realistic appraisal of rate charges and subsidies in the light of the developing competitive situation.

In some areas of the United States, notably the Southeast, the production of beef cattle is expanding rather rapidly due to the increased pasture acreage. In the light of increased red meat consumption locally due to a rapidly rising level of living, this area is faced with the alternative of shipping feeder cattle into the feed grain areas and in turn importing finished livestock or dressed meat, or shipping in feed grains and developing the feeding and processing industries within its own area. This problem is one which extends across the broad fields of marketing, farm management, and sociology, yet we feel it is one which deserves our attention and the attention of the appropriate research agencies.

Research on transportation is needed on the subjects of freight movements, traffic flows, and competitive freight charges among rail, truck, and water carriers on the basis of tonnage and costs; basic reasons for shippers' choice of carrier; and effects of recent transportation trends on the market structure and pricing mechanism. Research should also be initiated, in cooperation with railroads, to develop improved equipment and facilities for rapid loading and unloading of cars, including the use of covered hopper cars instead of boxcars.

It is noted that there is a serious lack of interest being shown at the Experiment Station level on transportation problems. It would seem desirable that this field of activity be explored as one which offers broad opportunity for research.

Report of Work Group V

EFFICIENCY OF DAIRY PRODUCT PREPARATION AND DISTRIBUTION

Members of Work Group

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Introduction

Work Group V outlined some of the pressing needs for decision which now confront management with the dairy industry. Important among these are the necessity for decisions on whether to adopt such new technologies as bulk procurement, pipe line milking, paper containers, quantity containers, and so on. Decisions on these matters may often be involved in larger considerations of marketing policy in a rapidly changing competitive structure.

Objectives of the Dairy Marketing Work Group

Work Group V called on a representative of Group I to state the underlying objectives of efficiency research in marketing. The statement, as formulated by Willard Cochrane of Group I, was assumed to be basic to the objectives of the work group and necessary assumptions were made to test this concept for application to dairy problems. The deliberations of work group I in the 1950 workshop were considered also, but they were laid aside in favor of more current considerations of this workshop.

The above selection meant that, for purposes of its immediate task, work group V assumed an ends-means ratio as a concept of efficiency. It assumed that the measures of efficiency may be infinite in number, the appropriate measure depending on what the decision-maker wants to know. It was agreed that what the decision-maker, or decision-making body, wants to know varies at different levels of aggregation; that the decision-maker seeks the highest value of the ends-means ratio; and that the total utility of the people involved in the aggregate is influenced by different sets of ends at the different levels of aggregation.

Factors in Analysis of Problem

The group undertook to analyze one of the problems, as an example, that are facing decision-makers. The new technology of bulk procurement was chosen for this purpose.

Bulk procurement refers to a system of farm cooling and storage, farm pickup, and plant receiving for milk. Under some sets of conditions a system employing this technology could be more efficient than a system employing can procurement, the system now chiefly used.

Although the decision-maker may not go into bulk procurement primarily for reasons of efficiency, but instead for reasons of competition, efficiency measurements are useful to him.

Decisions on whether to adopt bulk procurement, to what degree, and how to organize for it are made at several levels of aggregation. They are:

1. The industry level
2. The farm-assembly-plant level with this being considered as a firm for purposes of this decision.
3. The plant-firm level
4. The farm-firm level
5. The intra-firm levels of farm and plant

The most useful efficiency study for bulk procurement might well consider what ends would be sought at each of the above levels of aggregation. It could compare the ends-means ratios for bulk and can at each of the levels. The relative efficiency of bulk will be greater at some levels than at others. It is easier to measure at some levels than others. For example at the intra farm-firm level the ends may be only the (1) quantity of Grade A milk and (2) convenience. A reasonably satisfactory measure of efficiency might be:

$$\frac{\text{Grade A milk in (gallons)}}{\text{Capital inputs in (dollars)}} \quad \text{or} \quad \frac{\text{Grade A milk (gallons)}}{\text{Labor inputs (dollars)}} \quad \text{for}$$

each of the processes of bulk and can. The farmer can choose the measure expressed in terms of the factor most scarce to him. This avoids problems of aggregating unlike outputs or unlike inputs.

As the analysis moves to the farm-firm level, however, many more ends must be taken into account. A list would include at least the following:

1. Total farm output of goods and services
2. Stability of income
3. Profit
4. Leisure for the farm family
5. Optimum rate of growth
6. Convenience
7. Prestige
8. Capital accumulation

Some of these are measureable; some not. Most of the inputs (capital, labor, power, property taxes, etc.) are measurable and can be aggregated into dollars. The ratio of the inputs to the measurable outputs can be expressed with reasonable precision. Instead of ignoring the ends that cannot be measured, the careful analyst will point out that output value may go up or down with the various non-measurable ends that may be important to particular farmers. The same could be done for the effect of non-measurable inputs. Thus the analyst will make clear that the relative efficiency will vary.

The work group tended to agree that dairy economists should include qualitative evaluations of the various ends that are not measurable with respect to their effect on efficiency, as well as the quantitative measures.

Not only do the problems of measuring the ends and means become more difficult at successive levels of aggregation, but also the solution of measurable relationships becomes more difficult. At the firm level, problems are encountered which involve many input or output possibilities with a given set of resources.

Problems Encountered in Using the Analytical Structure

1. Many of the ends can't be measured.

2. Some of the means can't be measured (e.g. higher levels of management).

3. Even measurable ends are difficult to combine because we lack knowledge about the functional relation among them.

4. At the intra-plant level it is difficult to distinguish between the ends to be used for evaluating the process, from the ends of the firm.

5. If partial measures of efficiency are to be avoided then either inputs or ends must be price-weighted.

6. At the intra-plant and firm level the concept at this stage of development does not form an adequate basis for choice because of the exclusion of any functional input-output relationships.

Analytical Tools

A few tools and procedures were examined which were regarded as having some relatively unexplored possibilities for dairy marketing economists. These were: cost accounting, time and motion study, and activity analysis. These were reviewed by the following outline:

A. What is the method?

B. What are the types of analytical problems of efficiency for which the method is best suited?

C. What are the basic limitations of the method, including its basic assumptions?

A summary of each discussion follows:

Cost Accounting

Cost accounting is a method of measuring the inputs in monetary units associated with defined outputs. This method includes classifying operating expenses for a firm, plant or department, and systematically distributing them to particular jobs, products, or processes. Data for cost accounting are derived from conventional financial records, supplemented by special records and observational techniques such as surveys, engineering studies, and time studies. Operating expenses that can be clearly identified with jobs, processes, or products are allocated directly. Other operating expenses are allocated indirectly on the basis of operational observations, or known or estimated relationships.

In application of the principles of cost accounting, considerable variation in details of the procedure may be made. For example, in the cost accounting system widely used in dairy plants, the procedure may be simplified by accepting the definitions of ledger accounts found in the financial accounting system, and from these allocating the operating expense accounts to "cost centers" which combine elements of the concepts of "process" and "departmentalized" cost systems.

Cost accounting is used by management to evaluate performance of specified jobs or processes by comparing average costs with "standard" costs. Such comparisons may be made within firms. between plants or departments, or over time or among firms using similar accounting procedures.

Similarly, in marketing research, data which result from cost accounting procedures may be used to develop average costs for groups of plants, together with measures of variation. These results can be used by firms for comparative purposes, by public agencies responsible for pricing policies, for interregional comparisons and (when data are available for the same firms) continuously for estimating the current level of average costs, and changes in average costs over time. Such measures of average efficiency are useful bench marks for both firms and public agencies.

Though average money costs are the end product of cost accounting procedure as such, much valuable data suitable for economic analyses will result as a by-product. The budgeting method of analysis can draw heavily upon the relationships developed from cost accounting data. For example, as a basis for distributing labor costs to cost centers the accountants and industrial engineers develop detailed data which permit estimation of the relationship between output and labor inputs, measured in physical terms. When data for the same firm are available for several periods, the relationship can be computed for varied conditions, such as changes in volume of output.

The principal limitations of cost accounting data is that inputs and outputs are hard to classify in a manner fully consistent with economic theory. The data also do not provide an independent measure of capacity. Frequently the economist finds it difficult to relate physical inputs to the monetary inputs derived from cost accounting data. Because the processes are usually numerous and complex and sometimes interrelated, it is difficult to isolate relationships for processes, defined narrowly enough to be similar among firms. In many marketing firms (fluid milk plants for instance) the range of relevant variables over time is relatively small, which makes it difficult to measure changes in the same process within the firm. On the other hand, differences in efficiency may be approximated from inter-firm comparisons. With some adjustments in the data more sophisticated techniques of efficiency analyses can in large part use measurements obtained by cost accounting procedures.

Time and Motion Studies

These are studies following the science of industrial engineering, consisting of timing various motions, procedures, processes and so on. These studies are one way of getting precise input and output measurements in physical units. The appropriate degree of precision will depend on the decision for which efficiency measurements are being made.

Data so obtained may be used in simple comparisons of individual situations with performance standards, in budgeting, activity analyses and so on.

Objectives of motion studies are to save time of a single productive factor (man or machine), to reduce physical effort, or to increase plant capacity.

There are several methods of making time studies. Time requirements data may be obtained by survey methods, by using automatic recording devices, by the ratio-delay method and by the stop watch method. The two latter are discussed below:

The ratio-delay method is a sampling process. Activities of a particular worker or machine must be classified. Numerous separate observations are made and tallied within the classifications. This tally is used to estimate proportions of time in each application. A common application is to estimate proportions of productive and unproductive time.

It appears that the ratio-delay method may be more advantageous than the stop watch method of analysis when determining the efficiency of skills or processes which are repetitive but which may not recur at regular intervals. For activities which both occur frequently and also at regular intervals, the stop watch method seems best adapted. However, for either method, it is costly to estimate individual components of time requirements for activities which are irregular or nonrepetitive.

Time data obtained by stop watch methods might be used, for example, to analyze certain receiving room operations. A simple application would be to compare time requirements for two or more distinct methods of performing a simple function, as hand vs. automatic sampling. In more complex applications, time data are pieced and used with other cost data to discover least-cost combinations of productive factors.

Time and motion studies may be used to get physical measurements of time required to perform specified functions with existing techniques (the most common purpose of an economist) or actually to decrease the time required to perform a motion of a minute kind. Usually the latter is done by industrial engineers who issue "standard times" in tabular form. Such tables are available for use by economists in "synthesizing" various operations.

A basic limitation of many time and motion analyses is the cost of obtaining meaningful results.

Activity Analysis

Activity analysis is a mathematical technique designed to provide a single solution to a problem involving many input or output possibilities with a given set of resources. The solution obtained will maximize outputs or minimize inputs subject to certain mathematical restrictions. This technique has been used on problems of the following nature:

1. A firm has a fixed quantity of resources such as capital and labor.

2. The firm has several production possibilities which are physically possible with different combinations of resources. Each production possibility is defined as a process or activity.

3. For each activity, resources are used in some fixed proportions. Also constant returns to scale are assumed, i.e., doubling the quantity of resources used in any one activity doubles the output of that activity.

4. With the above conditions and, given the physical factor input requirements and output for each process, and the prices of factors and products, activity analysis permits a single solution to be determined which would maximize the firms cash revenue under these conditions.

As yet, no results of the use of the technique in the evaluation of dairy marketing efficiency have been published. It seems logical that this technique could be applied to dairy problems such as the product mix (output) of a flexible plant, given an existing set of plant, equipment, labor, milk supply, management and other factor and product prices. This problem closely parallels the illustrative example discussed above and therefore is subject to the same assumption and restrictions.

While this technique provides a single solution to problems with many possible solutions it essentially gives the same answers as budget analysis in less complex problems. The method requires essentially the same type of physical input-output information and factor and product prices as budget analysis. In activity analysis, however, the processes must be precisely defined and stated in mathematical terms. Because of this, the area of application of this technique is necessarily restricted.

Because of the many possible process combinations, it is not possible to retain the qualifications placed on some or all of the processes. Therefore, it is necessary to define each process in such a way that the implications are not lost in the interpretation of the mathematical results. At this time, the North Central Regional Committee on Dairy Marketing Research is conducting an activity analysis of a problem typically encountered by a fluid milk dealer. This study should shed some light on the applicability and limitations of this technique for dairy marketing problems.

Needs of Regulatory, Service and Extension Agencies for Marketing Efficiency Studies

Efficiency studies will meet the needs of regulatory, service, and extension agencies if there is careful correspondence among research personnel and personnel in those agencies at the time the problem is formulated. With this procedure the level of aggregation at which the decision is made will be decided and the nature of the decision. The degree of sophistication needed in the research will depend on the needs of the decision-maker as modified by considerations of time before the final decision date, and taking into account the funds, personnel and other resources available to research personnel. If research were so directed from the start, there should be no question of its usefulness when findings are ready.

Report of Work Group VI

IMPROVING WHOLESALING AND RETAILING

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Introduction

Retailing is a critical phase of our food marketing system. It is here that the consumer either accepts or rejects the products offered. To provide nutritious, satisfying foods of the kind, variety and quality desired by the consumer in the form most useful to her and at satisfactory prices is the goal of the retailer.

As the retailer devotes more of his time to meeting the desires of his customers, less time is left for keeping up with trade activities, competition, supply problems, and external affairs. The retailer is therefore finding pressure increasing for him to be able to lean heavily on his wholesalers for more services and increased lines of supplies.

To be able to perform the services demanded by the retail stores, wholesalers are finding it necessary to become better acquainted with retail problems and to tie in the wholesale program with retail activities so that they will be operated more as a team or supporting units.

Wholesale and Retail Functions

The various aspects and activities of the wholesale and retail functions that were brought up for discussion were grouped and later singled out for discussion one at a time. Nine topics were discussed:

I. Basic Trends in the Wholesale and Retail Field were discussed and changes were reported to be occurring throughout the nation.

A. Retailing trends are many and varied and do not always follow the same pattern in all sections of the country. Increasing numbers of shopping centers are being constructed which consist of a large variety of different stores, including one or more food stores. One of the advantages of suburban stores and shopping centers is that they help the consumers avoid traffic congestion and they supply adequate parking areas. Small stores are being replaced by larger ones through consolidation or replacement through the competitive process. These new stores not only carry more items but also have more departments. Larger units require more investment for buildings, goods and equipment.

Facilities both inside and outside these new stores were discussed. Inside, labor-saving equipment is becoming commonplace. Mechanical package delivery to the automobile is being instituted. Refrigeration equipment is much more widely used and the interior decorations are bright, attractive, and lively. Air-conditioning is becoming a near necessity. Lighting fixtures, wall murals, and soft music add pleasure to shopping. The stores are large, with spacious parking lots that frequently seem inadequate. The parking lots of today are lighted at night and have covered walkways to the store entrance.

One-stop household shopping service is becoming more complete with self-service, pan-ready or table-ready foods increasing steadily. Commonly found are such services as check cashing windows, kiddy corners, play pens, community bulletin boards, and consumer information.

Promotional aids of all kinds are being used to stimulate sales. Such aids include stamp plans, door prizes, special features such as circus attractions on the parking lots, even eating contests.

Buying trends are toward more direct buying with pre-printed order forms instead of from large numbers of salesmen. Buying of items already in consumer units is common. Rack jobbing in certain lines is a standard practice.

B. Wholesalers are relocating away from congested areas. Wholesalers are becoming one-stop sources of supplies to their retailers by adding departments such as frozen food, produce, meats and drugs to their grocery lines. Lower land-value areas with room for expansion are sought. Convenience to railroad and highway is important. More complete lines are being carried. To perform such functions efficiently, modern one-story warehouse facilities are being constructed with high investment requirements per wholesaler.

Wholesalers are becoming retail-minded. Services are being designed to keep the retailer well informed and to provide extra services that help place the retailer in the best competitive position. Direct order and delivery service gives the retailer more time in the store. Pricing guides and promotional materials enable the store to keep up with competition and trade activities.

Supplying retailers with consumer unit packaged products reduces the demand for back room supervision, space, and equipment in the store.

II. Business Analysis is a field yet to be more fully explored from the standpoint of using records as a guide for management decisions to bring about balanced departments and maximum net profits.

A. It appeared that a simple set of comparable records which would include operating statements for each department, as well as the whole store, would be most revealing as to weak spots in the store's overall operation. Resources could be more effectively balanced on a basis of profitableness. Departments needing more supervision or promotional emphasis could be readily detected.

B. Operating ratios for the firm and the industry should be worked up and made available as a guide. Such ratios expressed on a basis of dollar sales would be welcomed by the industry. Ratios can be expressed as sales per man hour or sales per labor dollar, along with percentage of departmental net to sales.

C. Turnover on a departmental basis as well as on individual items within the department would be desirable so that a warehouse or store operator could be guided on the investment in stock. Out of stock items could be held at a minimum, elimination of dead items could be facilitated, and all stock could receive more attention.

III. Materials handling efficiency to increase net is a phase currently receiving recognition at both wholesale and retail levels. Great strides are being made here, but since each of these marketing functions is primarily a materials handling job, it should continue to receive research and engineering attention to get the job done efficiently.

A. More effective use of labor and equipment as well as automation should be an ever-present goal at wholesale and retail. Layout of the facilities to give a direct line of flow to conserve labor and quality can be areas to watch as a way of increasing efficiency.

IV. Management decisions introduced the human element of coordinating all of the business figures, materials handling efficiency, trade activities, trends, consumer reaction and preferences, and any other information pertinent to the operation of wholesale and retail firms.

Within the framework of store policies, management decisions must be made constantly. They must be made in areas such as personnel training, modernization, departmentalization, promotions, services rendered, business organization, etc.

V. Modernizing market news reporting was an area that received lengthy discussion. To have a well informed trade and consumer, more detailed price and grade information is needed from more areas and levels in the marketing system. It was believed that market news reporting should be kept on the same dynamic basis as marketing itself.

A. Timeliness regarding collection of information as well as release and dissemination to the trade was stressed.

B. Insuring that the market information is representative of the total volume is a matter that should receive closer attention. More sources of information within the market to enable sampling from a larger volume is in order.

C. In the interest of completeness, narrower price ranges based on grade, size, and condition were requested. More definite and specific price-grade-condition relationship by sizes should tend to place producers in a better position than do commodity price ranges for all grades.

D. Better understanding and use of terminology in the market news reports is needed for proper interpretation. Explaining and defining abbreviations and terms periodically would be beneficial.

E. Extension of the information gathering function to retail prices on a size and condition basis would make possible a more comprehensive analysis.

VI. Pricing efficiency as a true relationship between consumer preferences and resource allocation as reflected through price of the product is a desirable situation.

A. The efficiency of the pricing system is important if the product value to the consumer is to be adequately reflected in the price which the producer receives for his product, and if effective allocation of resources is to be secured. To accomplish this it is necessary that consumer prices be reflected to the production level. Specific research information is required to reflect quality, as desired by the consumer, and to express it in terms of grades. Grade standards may need revision to include terms and definitions expressing consumer preferences so that different grades may result in price differentials that reflect intensity of demand for respective grades.

VII. Consumer preferences are ambiguous and difficult to ascertain. Consumers often may not know what they want.

A. Traditional buying habits influence consumer preferences and tend to perpetuate themselves. Retailers can come close to determining this type of preference through current operating sales analysis.

B. Opinions based on obscure psychological motivations as obtained from some surveys are not wholly adaptable as consumer preferences.

C. Controlled experiments as a means of scientifically analyzing consumer preferences are providing some help.

D. Consumer preferences may change as a result of external influences such as education and information. Changing consumer preferences through education and training provide interesting opportunities.

VIII. Wholesale and retail relationship is moving toward more dependence upon each other, with closer operating ties. Wholesalers are "thinking retail" and retailers are "thinking wholesale," each recognizing the other's function as a vital part of the trade. Each realizes that he cannot exist without the other.

A. Wholesale operations are providing retailers with more complete services. Competitive pricing advisory service, advertising assistance, promotional aids, financing arrangements, layout and engineering service, record keeping, and delivery of more lines of wider varieties of goods are some of the many services retailers are demanding of their suppliers.

B. Retailers, on the other hand, are concentrating their orders and placing them with the wholesaler who gives them the best support.

C. Additional data are needed to bring out operating efficiencies gained by wholesalers and retailers working together.

IX. Education and Service Activities - There is need for developing better understanding, a framework of operation, and more direct exchange of information between all people concerned directly and indirectly in working with wholesalers and retailers.

A. Individuals working in research, information services, and educational agencies should get to know the trade, what it is doing, as the first step in discovering problems. The trade can furnish information such as (1) reporting what consumers want; (2) data on problems in handling food commodities; (3) information on working relationships between retailers and wholesalers; (4) facts on how foods move into and out of a market.

Representatives of the trade should be invited to participate on committees charged with responsibility of working with producers, food handlers, and consumers. Pooling of information and problems is a constructive step toward developing closer working relationships and problem solving.

B. Techniques of operation in working with wholesalers and retailers include close cooperation and development of receptive attitudes as a way of working with each other and with professional workers. Following are suggested techniques:

1. Establish strong lines of communication concerning commodities, information on operation and problems. Movement of such information must be all-directional, reaching from producer through marketing channels to consumer and back to producer.

2. Organize advisory committees on county and State levels as groups that can cooperatively find problems, make recommendations as to needed research, and develop use of improved practices. Personal contact by professional workers is basic in developing interest and constructive cooperation of the trade and others in setting up such advisory committees.

C. Develop a plan for efficient gathering and dissemination of information. All those concerned with releasing information to producers, trade, and consumers must exchange copies of releases as a way of keeping each informed of specific activities and directions of work. Prompt availability of dependable research and trade information is necessary if help is to be given wholesalers and retailers when needed. It is recommended that releases of preliminary reports on research be provided all those concerned with working with the trade, as well as trade publications.

Group meetings on State, regional, and national levels contribute to understanding between those working with producers, trade, and consumers, development of cooperatively planned constructive programs, exchange of ideas, resource information, and workable plans for procedure in working with all groups.

A central source of all research information available on wholesaling and retailing would be helpful. This central source should also assume the responsibility of popularizing research findings, as well as develop visual aids and other teaching devices for the use of extension workers, trade organizations, and individual firms.

Report of Work Group VII

ASCERTAINING QUALITY AND SERVICE DEMANDS

Members of Work Group

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Introduction

The basic assumption made by this group was that efficient marketing provides at lowest cost the range of products and services or degrees of qualities consumers demand. In accepting this premise, it was recognized that the term "consumer" is often limited to the homemaker or the person who does the buying at the retail market for the family group. However, it is clear that buyers for institutions such as hospitals, restaurants, schools, and industrial plants have their demands for certain qualities and services also. In the discussion that follows these buyers are included in the "consumer" classification.

The usual textbook definition of demand is a schedule of quantities of a product consumers will buy in a given market at a given time at a given schedule of prices. Under this definition of demand, commodities with different qualities or with different services represent different products. Frequently, however, the measurement of consumer demand involves the preference for one product over another, for one service over another, or for one form over another. It was recognized that the measurement of demands could be expressed conceptually as separate points on two demand schedules or as a schedule of volumes taken at alternative qualities (services or forms), with price and other factors held constant.

It seemed evident that consumer or customer demands are not always clearly interpreted and accurately transmitted to the producers of goods and services. A breakdown in communications in the marketing channels may be such that the wholesaler either refuses to handle a given quality of food or fails to give recognition to foods of given qualities. Thus, retailers may not be in a position to buy a given quality of food even when it is demanded by the consumer. On the other hand, the consumer often claims to want a given quality and indicates a willingness to pay for it but does not substantiate this claim with his purchase. Again, consumer demands may change between point of sale and point of use.

Retailers may be sincerely interested in learning what consumers want. However, with present-day forms of merchandising, little opportunity is given for direct communication between the retailer and the consumer. Means must be found for relaying the demands of the consumer to the retailer, the wholesaler, the processor, or the producer. In fact, each group must become aware of the problems involved in the satisfactory meeting of quality and services demanded.

The demand for agricultural products by other than family consumer units makes up a substantial and rapidly increasing share of the market. Demand studies of the use of food, apparel, and household textiles by institutions have not been given much consideration in the past. Since some of these consuming units are quite likely to have quality and service demands that differ from those of family units, further study of their demands is merited.

Various aggregate and related economic data on sales, prices, shipments, income, production, and other items, compiled by trade associations, government agencies, individual companies, and others are often quite helpful in analysis of demand. These kinds of data are usually available for rather long periods of time and make possible trend analyses which are often helpful in setting the economic climate for a detailed demand study and in projecting the study results into the future. Such aggregate data are usually not in sufficient detail to allow the ascertainment of quality and service demand in the sense covered by this report.

The problem then seems to be to develop and/or devise means of measuring consumer demand for products of different qualities and for services and ways of using this information to bring about more efficient marketing.

Major Topics Covered

This report is directed toward the following topics: Factors likely to affect consumers' purchases and the nature of the demand for agricultural products, primarily food; methods of studying the nature of consumer demand; and uses of information regarding consumer demand. These are discussed separately below.

I. Factors likely to affect consumer purchases and the nature of the demand for agricultural products, primarily food

Factors likely to affect the consumer demand schedule for food products are: the product itself, other products on the market, family or group characteristics, environmental factors, and information available.

A. Qualities and characteristics associated with the product

1. Appearance of product and/or package
2. Price and size of package
3. Price per unit
4. Convenience of buying, preparation, use, and transportation
5. Suitability for use intended
6. Quality--color, condition, size, maturity, flavor nutritional value, and palatability
7. Choices available in quality and package size
8. Yield--edible portion
9. Size and location of display

B. The qualities and characteristics listed under (A) as they relate to all other products offered for sale. These effects may be different for:

1. Closely competitive products
2. Closely complementary products
3. Other products

C. Characteristics of consumer unit for which food is purchased

1. Disposable income and budget
2. Customs, habits, religion, nationality, education, and social status
3. Occupation, activity, age, sex, and size
4. Use of home-produced foods

5. Communication, facilities for storage and food preparation, distance to market, and transportation facilities

D. Environmental factors

1. Climate

2. Weather

3. Urbanization

4. Season

5. Geographical location

E. Extent of market information and promotional activity

II. Methods of studying the nature of consumer demand

Information regarding the nature of demand may be obtained either from the consumer unit or at the point where purchases are made. Various combinations of recall, records, and observation may be used under controlled or uncontrolled situations depending upon the nature of a particular problem.

In the discussion that follows certain advantages and limitations of representative methods of studying demand are noted. Only some of the more generally used combinations of sources of data and methods of collection are discussed. Variations of the methods of collecting information on demand mentioned below can be used in studying non-family demand.

A. The mail questionnaire

The mail questionnaire is useful in:

1. Background planning for a more intensive study

2. Determining the range of experiences, practices, habits, uses, and similar items

3. Tracing the distribution pattern of a product

4. Estimating market potentials

Among the advantages of the mail questionnaire are:

1. Method is relatively inexpensive.

2. At a given cost it is possible to cover a greater segment of the population than is possible by most other methods.

3. Information desired can be made available quickly.

4. There is no enumerator bias.

Among the limitations of the mail questionnaire are:

1. Non-response may be a problem.

2. Subject matter which can be covered is more limited in nature and quantity than with most other methods.

3. Questions asked must be very specific.

4. Even when carefully stated, the possibility of misinterpretation remains.

5. Recall error may be present.

6. Some respondents may intentionally misrepresent or misreport.

B. The personal interview

The personal interview is useful in:

1. Studying preferences where respondents have had experience

2. Determining present practices and use

3. Indicating the direction of response to changes in price, form, and other factors

4. Determining intensity of preference, motives, and other qualities when depth questioning is a part of the interview

5. Estimating market potentials

Among the advantages of the personal interview are:

1. A representative sampling of selected populations can be maintained with greater ease than with the mail questionnaire.

2. It is possible to impose some controls on the data.

3. More data may be obtained than by use of the mail questionnaire

4. It is possible to obtain data regarding family, group, homemaker, or others, as desired.

Among the limitations of the personal interview method are:

1. It may be more expensive than mail questionnaire.
2. Recall error may be present.
3. Interviewer can introduce bias.
4. Care must be used in wording and phrasing the questions.
5. Some respondents may intentionally misrepresent or misreport.
6. Respondent may be unable to explain complexity of reasons for decisions reached.

C. Consumer panels

Consumer panels in which diaries of purchases are used make possible the continuous collection of a vast amount of data for a relatively long period of time.

Consumer panel-diaries are useful in:

1. Determining the effects of income level, family size, age, education, and other family characteristics on family expenditures for different food and nonfood products, qualities of product, and services
2. Studying adjustments consumers make in their purchases over a period of time with changes in income, family size, and similar variables
3. Studying shifts in purchases among products and groups of products with changes in price relationships, quality, and services provided
4. Studying lags in adjustments in consumption to changes in price

Among the advantages of the panel diary are:

1. Provides data over a period of time so that the effects of factors changing over time can be measured.
2. May provide data on the purchase of many commodities.
3. Provides information on all purchases regardless of the location of the purchase.
4. Compared with other methods relying on memory, more complete and accurate data may be obtained by this method.

5. Some of the deliberate over- and under-reporting encountered in surveys may be eliminated.

Among the limitations of consumer panels are:

1. In the case of panels continuing over a long period it is difficult to keep the panel representative of the population.

2. Considerable effort may be required to maintain a level of participation among cooperators that is in accordance with minimum standards.

3. Analysis of quality demands is limited by the respondents' ability to identify and describe quality differences.

4. Consumers' purchases may be conditioned by their membership in the panel and by their keeping a diary.

5. Considerable time of trained workers is required to edit diaries and to supervise diary-keeping. If data are obtained on only a few commodities, the cost of the information is relatively high.

6. Diary data can not be used to analyse motivations and reasons directly.

Controlled Experiments

The measurement of consumer unit preferences for qualities of products and the services attached to those products may be possible at the point of sale. This measurement for families or households is commonly made at the retail store either by observation of purchases or by actual sales records. The design of the experiments for measurement of consumer unit preferences at the store varies in complexity from the matched lot design to fairly complex rotational designs.

In the matched lot design, two or more separate lots of the product are offered in the same store or stores. The lots differ only in quality or type of service under study. No specific restrictions on the number or type of stores are required. However, an attempt is made to obtain representation of several types of stores.

Among the advantages of the matched lot design are:

(1) Analyses can be made of choices of consuming units for given qualities or services with specific price differences or premiums.

(2) State management can readily understand the study and results.

Among the limitations of the matched lot design are:

(1) It is difficult to keep constant differences in the test lots.

(2) Cannot measure the effect of alternatives on total purchases of this and other products.

(3) Can indicate direction but cannot measure the intensity of preference.

The matched store design involves the separation of like stores into two or more groups. If only two quality or service differences are to be varied for study, then two groups of stores are involved. Each additional quality or service difference under study requires an additional group of stores.

Among the advantages of the matched store design are:

(1) Permits the study of the effect of a given quality or service upon total and per customer sales of the product for a given period of time.

(2) Useful where qualities or services cannot be easily rotated from one store to another.

(3) Provides one measure of the intensity of preference.

(4) Provides an indication of the long run demand.

(5) Store management can readily understand the study and results.

Among the limitations of the matched store design are:

(1) It is difficult to match stores.

(2) A large number of stores is required for the study of several variables.

In rotational designs only one treatment is used in each store at any one time and treatments are rotated among stores in such a manner that the effects of time and store differences on sales are measured or controlled. Within each store display size, price, and other variables are usually controlled and a realistic range of choices is available to customers. The latin square is one example of this type of experiment.

Among the advantages of the rotational design are:

(1) More nearly precise relationships of qualities or services can be shown.

(2) Most of the effects of nontest variables can be eliminated either by store selection or by statistical analysis.

(3) With careful design, short-run carryover effects of one quality or service to the next quality or service can be measured.

Among the limitations of rotational design are:

(1) The application is limited to chain stores in order to minimize the effects of nontest variables.

(2) Special handling of products and alteration of business or accounting practices are frequently required of growers and store personnel.

(3) It is difficult for store management to see clearly what is happening in the experiment or to understand the interpretation of the result.

III. Uses of information regarding consumer demand

Demand data relative to product qualities and services enable the economic system to more efficiently provide those qualities and services demanded. Clear expression of demands, quickly and accurately interpreted, transmitted, received, and utilized throughout the marketing channel, contributes importantly to an efficient economic system. This information can be useful to retailers, wholesalers, processors, farmers, and public agencies in making decisions with respect to the following:

A. By retailers and other handlers

1. Purchase policy--products and qualities to buy and prices to offer
2. Qualities to maintain and quality maintenance practices
3. Store location and services to be provided
4. Location of stores or areas for testing innovations
5. Price policy or policies
6. Space allocation, size of units offered, advertising, and other merchandising practices

B. By processors

1. Production rates and development of new products
2. Merchandising programs
3. Pricing policies
4. Quality control standards

5. Sizes and types of containers to be used
6. Sources of raw product supply

C. By farmers

1. Products, types, qualities, and varieties to be produced
2. Timing production and marketing
3. Quality maintenance
4. Grading standards
5. Containers to be used
6. Type of buyer to seek

D. By public agencies

Many public agencies use demand information in policy determination and program execution. Extension and service personnel find this information particularly useful in their programs with consumers and with the groups mentioned in A, B, and C above and the decisions indicated there.

Conclusion

There is a great need for application of marketing information to meet consumer demand more closely with regard to qualities and services. Economic information such as quality and service demands is not readily picked up and used in meeting the demands of various consuming groups. A catalyst or some additional factor is frequently needed to change the balance of countervailing forces. Research results must be interpreted and applied in the marketing system to move toward optimum efficiency. Two-way communication and close cooperation among research, educational, and service personnel facilitates progress toward this goal.

Report of Work Group VIII

SELLING NEW PRODUCTS, SERVICES AND IDEAS

Members of Work Group

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Introduction

The group approached its discussion topic by considering: (1) the purposes and objectives of activities and programs initiated to obtain acceptance of new products, marketing services and ideas; (2) listing the several areas or topics to be discussed; and (3) step-by-step consideration of each of these areas in detail.

Objectives

The development, testing, and commercial adoption of new products, services, and methods benefit producers of agricultural commodities by increasing the demand, thereby providing a market for greater output and strengthening the prices they receive. New developments benefit marketing agencies by affording a possible means to increase their profits from handling a greater volume of products or selling more services at prevailing margins, or by reducing costs of their operations. Consumers, likewise, gain from changes in products and services which provide greater satisfactions to them. In short, activities directed toward developing new products, services, and ideas may have as their objectives improvements in: (1) producers' net incomes, (2) profits to marketing agencies, (3) consumers' satisfactions.

A clarification of the "efficiency" concept as related to the development of new products and services is needed. However, this problem is closely related to the topic discussed by Group I. Therefore, the assumption was made that new product and service development usually is desirable from the standpoint of those affected. The group then concerned itself largely with study and evaluation of the problems of selling new products, services, and ideas. The group placed particular emphasis on the role of public research, education, and service in these activities, and in the most economic ways of attaining the objectives.

The discussion was divided into seven parts, namely: (1) physical product development and laboratory test, (2) market appraisal and testing, (3) consumer acceptance, (4) producer reaction, (5) institutional arrangements affecting acceptance, (6) adjustments in market structure, and (7) responsibility of public agencies.

Physical Product Development and Laboratory Testing

The first stage in the development of a new product or service is the acceptance of a new idea. Utilization research of the Land Grant Colleges and the United States Department of Agriculture is designed to facilitate development of new products and improvements in existing products. Additional research is devoted to improvement in processing and services. Particular attention is given to products in abundant supply.

Examples of stages in the development of new product:

1. Recognition of problem
2. Laboratory research (frequently requires talents of different disciplines)
3. Physical and chemical product testing
4. Taste testing
5. Pilot plant manufacture
6. Industrial appraisal
7. Cost estimation

Examples of recent developments:

1. Citrus and tomato juice powders
2. Potato granules and flakes (dried mashed potatoes)
3. Fruit juice concentrates
4. Fats in animal feeds
5. Improvements in frozen fruit and vegetable quality through time-temperature tolerance studies
6. Utilization of vegetable wastes in animal feeds

Market Appraisal and Testing

Determination of the potential demand for new products, services, and ideas involves:

1. Discovery of the incentives for these changes, including the following possibilities:

    a. Degree of current satisfaction or dissatisfaction of consumers with specific products and ways of obtaining improvement
    b. The functioning of the profit motive of entrepreneurs
    c. Requests by public agencies, such as defense agencies
    d. Surplus disposal
    e. Personal recognition of research and educational workers

2. Appraisal of market potential during testing phase of product or service development. This includes:

    a. Surveys of processors, facilities, handlers, and consumers
    b. Directives for changes in product or service based on (a). There is a need for greater emphasis on discovery and reporting dissatisfactions, as well as ways of improvement, back to research workers so that corrective steps may be initiated.

3. Appraisal of market for tested product or service through use of the tools listed below

Tools that may be used in market appraisal:

1. Aggregative approach - This approach usually relies on secondary data. A new approach is the use of family purchase data. We need improved methodology for analyzing demand for new products and services owing to lack of historical data for them.
2. Surveys (of processors, handlers, consumers, etc.)
3. Panels
4. Group interviewing
5. Controlled experiments
6. Observation
7. Retail audit
8. Income and employment measures
9. Product or service tests - These are largely concerned with measure of volume of movement in product promotions. They may be supplemented with consumer surveys, observation, etc.
10. Derived disappearance measures

The 10 tools listed above may be used to measure the following:

1. Volume of product moved or estimated consumption
2. Character of consuming public, both socio-economic and geographic
3. Number and frequency of purchases
4. Consumer preferences, attitudes, reactions, motivations
5. Effect of merchandising techniques
6. Effect of price variation, management, etc.
7. Habits, both consuming and purchasing
8. Income elasticity

9. Need for and availability of products
10. Various other factors in market appraisal which concern consumers, the product or service, and the conditions under which they are presented to the buyer

The available tools are generally satisfactory for measurement of fairly well-defined characteristics of the consumer, the product, or merchandising practice, when the important variables can be controlled. However, the methodology for analysis of motivation in demand is less adequate. Researchers usually can measure and explain, what people do, and often what they will do, but are not as proficient in explaining why.

Consumer Acceptance

Typical consumer acceptance of new products, services, and ideas involves combinations of the following:

1. Convenience
2. Time saving
3. Economy
4. Better quality
5. Better storage life or less storage space
6. Variety
7. Appearance

Consumer acceptance is encouraged by:

1. Advertising, brand and commodity - usually by private agencies
2. Trade associations
3. Farm organizations
4. Public utilities
5. Private commercial organizations
6. Service clubs - YMCA, YWCA, PTA, AAUW
7. Professional organizations
8. Newspapers - features, women's page, food columns
9. Women's magazines
10. Educational agencies - schools, colleges, Federal-State Extension Service

Special attention was given to the consumer information programs of the Extension Service, through which food information is disseminated to consumers - supplies on the market, varieties, price, quality, selection, nutritive value, home care, and use. Media used include press, radio, television, films, circular letters, demonstrations, exhibits, talks to groups, as well as personal contacts with individuals. Information for these programs is obtained from government market news reports, contacts with local producers, wholesalers, processors, and retailers, USDA, State Departments of Agriculture, Land Grant Colleges, and Extension Services.

This program provides a good tool for informing the consuming public of new products, new services, and new ideas in the areas in which it operates. Its coverage is limited, with the most far-reaching programs located in some of the largest urban centers.

Other phases of the Extension programs which disseminate food marketing information include foods and nutrition and agricultural economics.

Team Approach Required

The commercial success of a development of a new agricultural product or service may require the complete cooperation of the primary producer. Therefore, to secure this cooperation, a team approach is needed to develop mutual understanding of the viewpoints of producers, consumers, and all those engaged in the marketing of a given product.

Mechanism of Providing the Information to Producers

Producers need to be kept informed of real and potential advantages (or disadvantages) through the introduction of a given development in terms of effects on their prices, on the opening of new markets, and the strengthening of current markets.

Effective liaison is needed among the following groups to exchange technical and economic information related to a given development:

1. Product and service development research
2. Producers
3. Intermediate processors and marketing agents
4. Consumers

The following media are used to bring about this exchange of information:

1. Meetings
    a. Farm and trade associations
    b. Extension Service - State and county
    c. State Councils - i. e., nutrition, welfare
    d. Program Councils - i. e., home economics
    e. Demonstrations - i. e., schools and PTA
2. Press, radio, television and other information media

The following are among those cooperating in developing and disseminating such producer information through research, marketing, educational, and service activities:

1. United States Department of Agriculture
2. State Colleges of Agriculture
3. State and County Extension Services
4. State Departments of Agriculture
5. Trade organizations
6. Farm organizations

Institutional Arrangements Affecting Acceptance

Numerous institutional factors affect the degree and rate of acceptance of new developments, including:

1. Customs and habits of producers, consumers, and marketing agents
2. Group resistance, i. e., labor, management, farmers
3. Laws and regulations, i. e., taxes, patents, anti-trust laws, health and sanitary measures, and market protection devices.

Public agencies can reduce frictions through research and education to inform those groups affected of the economic implications of institutional arrangements. Acceptance can be facilitated in this manner.

Adjustments in Market Structure

The commercial adoption of new products and services may necessitate adjustments in the market structure. For example:

1. Replacement of obsolete facilities
2. Reorganization of transportation
3. Adjustments in functions and services of marketing agents
4. Shifts in comparative advantage of areas
5. Position of secondary suppliers
6. Status of competing, joint, and complementary products
7. Alterations in the activities of regulating agencies

Public agencies can contribute to adjustments in the market structure by:

1. Evaluating potential effects of new products and services
2. Participating in the adjustments by research and education
3. Providing credit
4. Establishing necessary regulations to encourage orderly marketing (under some circumstances direct public action)

Responsibility of Public Agencies

Public agencies primarily concerned with product and service development, testing, and commercial acceptance include United States Department of Agriculture, the Land Grant Colleges, and State Departments of Agriculture.

1. Reasons for public agencies accepting responsibility:
    a. Specific legislative direction
    b. Inability of individual firms to provide their own research and product development
    c. To provide long-time basic research for public use
    d. Requests from special interests

2. Criteria for determining responsibility of public agencies:
    a. Whether private industry can or will do the job as effectively as public agencies
    b. Extent of public benefit

c. Need for unbiased, reliable, and objective research results made public
d. Conditions of national emergency

Conclusion

Successful development and acceptance of new products or services require the effort of many phases of activity in agricultural agencies. New ideas need to flow from all of those contacting consumers and marketing agents to those concerned with physical development of research. The needs of consumers and the trade can then more readily be translated into research ideas. Combination of efforts of physical science, marketing, and psychological research workers as well as educational and market service personnel are required for successful introduction and acceptance. Industrial examples indicate the necessity for team approaches with specific management delegation of responsibility. Only through coordinated activity can we fulfill the needs in development and introduction of new product service and ideas.

Report of Work Group IX

RELATION OF FRUITS AND VEGETABLE QUALITY MAINTENANCE TO MARKETING EFFICIENCY

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Introduction

Before delineating its responsibilities, Work Group IX accepted the following definition of quality proposed by Work Group III at the 1951 marketing workshop: "QUALITY is the combination of attributes of a product that have significance in determining the degree of acceptability of the product to a user." The following definition of marketing efficiency was adopted: "The movement of products in an acceptable form and of acceptable quality from producer to consumer at the least possible cost."

After considerable discussion of these two definitions, the working group concluded that in any set of conditions established for the efficient marketing of fruits and vegetables to maintain desired levels of quality, the facilities must be flexible and responsive to economic conditions and technological advances. These would include the development of new horticultural varieties, changes in the production and harvesting practices, new developments in the preparation and preservation of the products for market, advances in merchandising methods, and changes in consumer utilization of the products.

It was recognized that the most desired quality from a physical standpoint may not always be the most economic. The additional cost necessary to obtain or maintain a desired quality may add more to its price than most consumers are willing to pay for the product. The use of specified methods or practices or the adoption of new practices by those in the various segments of the marketing system depend on the net returns reflected to them.

Work Group IX attempted to define two major areas affecting the relationship of quality maintenance of fruits and vegetables to efficient methods of marketing: (1) reduction of waste and spoilage in the marketing of fruits and vegetables, and (2) standards and quality control in the marketing of fruits and vegetables.

I. Reduction of Waste and Spoilage in the Marketing of Fruits and Vegetables

The group realized that many of the following factors used for the reduction of waste and spoilage to improve the marketing efficiency of fruits and vegetables may be very beneficial in the maintaining of their qualities. Due to the differences in the forms in which fruits and vegetables are marketed, they were divided into two main categories, fresh and processed.

A. Fresh fruits and vegetables

1. Refrigeration and cooling

Rapid advances are being made in the application of refrigeration principles to the efficient marketing of fruits and vegetables. Many more advances are forthcoming. There is still a great need for many phases of refrigeration at all points during the marketing channels from the producer to the consumer.

a. Precooling---This practice has increased in use in recent years. It is particularly important in the reduction of waste and spoilage of fruits and vegetables. There is need for research on precooling and on packaging methods best suited for the various precooling treatments.

b. Vacuum cooling---This has found wide application for efficient cooling of lettuce, and to a limited extent, with certain other vegetables. Some of its outstanding advantages are that it (1) facilitates the use of fibreboard containers, (2) aids in the preservation of quality, (3) can be used for consumer-sized prepackaged items at chain warehouses. However, items vacuum cooled need to be refrigerated during the marketing channels. Considerable research is needed before vacuum cooling can be extended to other commodities.

c. Hydrocooling---This may be referred to as Stericooling (a patented name). However, "Stericooling" is only hydrocooling with chlorine or some other fungistat added to the water. This method of cooling vegetables and fruits is finding wide application. After considerable discussion the group concluded the following: (1) Hydrocooling is a real aid to quality preservation, (2) Subsequent refrigeration is desirable, and (3) Some question regarding its effect on the control of growth of rot and other spoilage micro-organisms still persists. The need for more research and extension work was emphasized.

d. Tunnel cooling---This is relatively new. It has been used successfully on grapes. It has the advantage of being applicable when water cannot be used as a cooling medium and fast cooling is required.

e. Car and truck precooling---Some commodities are cooled in the cars and trucks after loading. This saves handling of the commodity. It was pointed out that this method of cooling is often as efficient as cooling in cold rooms or warehouses.

f. Refrigeration in transit

    (1). Truck---Shipment in refrigerated trucks cuts down handling and may facilitate greater speed in the movement of the commodity from point of origin to destination. Advances are being made in truck refrigeration (air circulation, mechanical refrigeration, blown ice, better insulation). Precooling and truck refrigeration offer great possibilities in the maintenance of quality and the reduction of waste and spoilage.

    (2). Rail---There is some trend today toward mechanical refrigeration of railroad cars. The present use is almost entirely for shipment of frozen foods.

(3). Ship---Few ships have sufficient refrigeration to effectively remove heat from fruits and vegetables to temperatures below 40°F. Precooling is essential for product quality maintenance. Shippers and other agencies need to recognize the temperatures required by various commodities.

(4). Air---At the present time, specialty commodities that can pay the costs through premium prices are the only ones that are moved by air; that is, flowers, premium fruits, etc. Precooling before shipment, insulation, and air circulation constitute feasible product protection during air transport.

g. Wholesale, retail and home refrigeration---There is great need for expansion of warehouse refrigeration for use by all local and national chain stores and private wholesalers to maintain proper refrigeration of products arriving from points of origin. These facilities are also needed at shipping point. Refrigeration is too often stopped at the wholesale level when the product is most susceptible to deterioration. There is need also for refrigeration facilities at all types of retail outlets. The group concluded that, in general, adequate refrigeration space is available in consumers' homes. However, consumers need more information on how to use refrigeration to maintain the quality of fruits and vegetables and reduce spoilage and waste. It was pointed out that rapid handling may relieve the need for refrigeration in some cases. The group concluded that there was considerable need for more basic and applied research in the whole field of refrigeration to reduce spoilage and waste of fruits and vegetables during the marketing channels. Further, there is need for special emphasis on educational work to promote application of knowledge and information already available on the factors that help to maintain acceptable quality levels of fruits and vegetables.

2. Handling

a. Preharvest practices---Although not usually considered marketing factors, varieties, soils, irrigation, and spray programs affect the quality and marketability of a fruit or vegetable. Improvements of production practices to attain a higher degree of marketability requires closer coordination between production and marketing specialists. Increased yields of a less marketable crop is a questionable achievement.

b. Harvesting---This is a critical stage in getting a product from the field to the consumer because of the many ways it can affect quality. The product must be handled as an individual unit in many operations. Careful handling is essential. A crop taking weeks or months to grow can be ruined in a short time. The increased use of mechanical devices of one kind or another may aid in speeding the harvest, but if not properly operated, they may reduce quality and over-all marketing efficiency.

Harvesting is not merely a handling practice: it involves decision-making. The harvester often must decide as to proper maturity, color, size, and probable market value. Not only must the decision be reached on a given day at a given day at a given time, but requirements may change from day to day as market conditions vary.

Obviously, improved harvesting practices require additional educational endeavors on a continuing basis. The job is never done. Obviously too, research is needed as to the effects of harvesting practices on over-all marketing efficiency and quality maintenance. Particularly is this true in the field of incentives for harvest workers. How can they be persuaded to do as good a job as they may know how to do?

c. Washing---This is often a necessity. Removal of dirt and spray residues may be required to make a product saleable at all. In other cases, washing makes the product more acceptable and to this extent, at least, improves marketing efficiency. The practice of washing will probably increase. However, it is not an unadulterated blessing because of the following factors which may reduce quality and consequently marketing efficiency:

(1). Mechanical injury---Washing is largely a mechanical process and consequently an operation in which damage may occur.

(2). Contamination---Washing may spread infection of the product with decay producing organisms through infected machinery and wash water. Surface action agents and other chemicals may help to control disease but could become objectionable from a residue standpoint. Since most decay producing organisms require moisture for growth, washing without drying may aid in furnishing conditions ideal for decay of the product.

Washing is in an early stage of its development. Research will be needed to determine the effects on various crops and the influence of surface action agents, decay inhibitors and drying methods. As information is accumulated, extension service will be needed to make such knowledge generally available.

d. Waxing---Waxing may aid in slowing dehydration of some products, thus aiding directly in quality maintenance. In other cases waxing may improve appearance and thus speed turnover of the commodity. However, the waxy film formed on the water in cooking waxed produce is objectionable. Washing is largely a mechanical process and unless precautions are taken the product may suffer mechanical injury. In such instances, it contributes neither to quality maintenance or marketing efficiency. If waxing conceals defects, it may be objected to by regulatory agencies.

e. Coloring---Coloring of some fruits and vegetables has met with public approval and has added to their sales appeal. This has increased turnover and lessened waste and spoilage. In some cases, colors may have undesirable qualities. Federal and State regulations regarding labeling requirements are in effect and compliance for coloring with them is to the interest of all concerned.

f. Sorting---Sorting is an attempt to group a varied product into classes which presumably more nearly meets the needs of people who have preferences and prejudices. When well done, it improves the saleability of the product, minimizes confusion, and aids considerably in the overall efficiency of marketing. Sorting also removes decay and lessens the possibility of infection of other fruits and vegetables in the lot and thus plays some part in quality maintenance.

(1). Sorting is similar to harvesting in that it involves materials handling. The dangers inherent in handling tender products apply to the sorting process.

(2). Sorting in many cases involves a decision-making process and a knowledge of quality standards.

(3). Since sorting requires knowledge, educational methods to improve a knowledge of sorting are needed. Work on improved standards to which the product should be sorted are needed. Research has been done and should continue to be done on devices to make sorting easier. Sorting tables, light quality, and employee responsibilities are fields of endeavor.

g. Partial preparation---Peeled potatoes, husked corn, shelled peas and lima beans, salad and soup mixes, and peeled sliced apples are examples of partial preparation. When properly done, partial preparation may increase the acceptability of the product for a certain portion of the population.

Partial preparation represents a trend which seems destined to increase. Research is needed on methods of preparation. Educational work will be needed on methods of handling from preparation through the marketing channels to the consumer.

h. Ripening and conditioning---Most people prefer to buy products like melons, peaches, pears, and tomatoes in a ripe condition ready for eating. At the same time, long experience has taught that the risk involved in handling ripe fruit and some melons is so great as to make such handling prohibitive. Increased consumer emphasis on outward appearance of the product has increased the complexity of the problem.

The above situation has resulted in the practice of harvesting some products at a stage when they do not have high quality in order to more easily maintain at least some quality. At the same time various methods have been devised to make some products more acceptable to the buyer and at the same time permit reasonably economical distribution. In addition there is often the problem of restoring to acceptable condition products which show the effects of their course through the marketing channels.

Although much has been done, considerably more should be done along lines such as determining how ripe the commodity should be for consumer acceptability. More research is needed to determine the relationships between maturity at time of harvest and quality at time of sale; the temperatures and humidities most favorable to ripening, and the time required for ripening. Further research is needed also in development of packages to be used for the ripened commodity, improvement of methods of distribution and merchandising of ripened commodities, and in consumer information as to the meaning of quality in relation to use of ripened commodities. In the field of conditioning, the curing of sweet potatoes at high temperatures and humitities to improve quality and prevent decay is an example of such research. Curing of onions and squash prior to storage and suberization of Irish potatoes are additional examples.

Research in these areas can provide a basis for the eventual adoption of improved practices through the use of extension and service work.

3. Packaging

There is a definite trend towards more consumer packaging in many commodities. Some of the advantages of consumer packaging over bulk packaging are: (1) convenience in self-service selling, (2) convenience to the consumer in the home, (3) quality maintenance through protection from handling by the consumer and less moisture loss, (4) display improvements, (5) aid in branding and sales promotion, (6) protection of the commodity from insects and disease.

Consumer packaging of fruits and vegetables may take place at production or assembly point, at terminal or wholesale level, or at store level. Advantages in production point packaging include: reduction in shipping weights and lower unit handling costs. At the store level the following advantages were noted: (1) better freshness control, (2) protection for tender items by use of nonrigid containers, (3) better utilization of store labor, and (4) greater adaptability of packaged items to branding and sales promotion.

Terminal or wholesale packaging overlaps and includes advantages of two types previously mentioned. The group, also, noted certain advantages for bulk packaging: (1) it may permit the product to be held at more desirable temperatures and humidities, (2) it may provide more adequate protection for mechanical damage.

4. Decay Control Treatments

a. Preharvest treatments---Preharvest treatments are intended to reduce the existence of disease. Some materials serve to help in the control of decay and undesirable physiological changes.

b. Chemical washes---Several washes have been in use for many years to control decay. Borax wash for citrus fruits is an example. New treatments are being developed such as Dowicide-A-hexamine for citrus fruits, apples, and pears. Research is needed to evaluate the effectiveness of these treatments and to develop better ones. The benefits appear to cover a wide range and their value in maintaining quality is increasing.

c. Volatile fumigants---Some volatile fumigants are in wide use---for example, sulphur dioxide on grapes. Others show promise for the control of decay in a number of fruits and vegetables.

d. Carbon dioxide treatments---Atmospheres enriched in carbon dioxide are employed to retard decay development and physiological changes in a number of fruits. Shipments of cherries and strawberries often have dry ice placed in the refrigerator car. Cold storages for certain varieties of apples are gas-tight to permit carbon-dioxide levels to build up and oxygen to dimish. Pears are packed in boxes lined with sealed polyethylene bags to gain the benefits of carbon dioxide built up in the container by respiration.

e. Impregnated liners, boxes and wrappers---This method of decay control is used quite extensively for citrus and other fruits.

f. Irradiation---This is an entirely new field which may revolutionize fruit and vegetable marketing. Areas in which research work is now being conducted are limited. Considerable basic research is needed covering the effect of irradiation on components of the particular fruit or vegetable before the results on the whole item can be accurately determined. Limited experience on surface sterilization has shown promise.

In general, the work group concluded that considerable basic and applied research information is needed on decay control and toxicological aspects and should be pursued as a primary effort toward better quality maintenance to improve marketing efficiency. This is particularly important to the fresh fruit and vegetable industry. Emphasis should be given to use of clean containers not contaminated with mold spores, yeast or bacteria as a step in effective decay control.

B. Processed fruits and vegetables

Processing is an important method of preventing waste and spoilage in marketing channels. It may also serve to take care of surpluses. The raw product may spoil before it is processed if not handled properly. Waste and spoilage of the processed product may also result from improper handling in distribution and in the home.

1. Selection of raw products and handling before processing

In this field the quality control personnel and the field men of the processing organization must be very active in selection of qualified growers, providing them with advice and information on the processors requirements, and in many cases with seed and insecticides. The Extension agents in food technology and in raw products production should be of great help in this field, particularly where the processors are not large enough to provide quality control personnel of their own.

Where applicable and economical, refrigeration should be used to hold raw produce. One of the principal reasons processing can assist in reduction of waste and spoilage is that it is done near the growing area, and the raw products need be transported only short distances. This advantage may be lost if proper consideration is not given, especially at the season's peak, to refrigeration and certain other procedures of the type mentioned for fresh produce. This includes also sanitation in the plant operations, such as cleaning of belts, fillers and other equipment, and in field operations by cleaning lug boxes, berry hallock, flats, etc.

2. Processing

Use of proper processing techniques is essential. Processing will be best conducted under the supervision, from the quality control standpoint, of competent trained personnel. There appears to be definite benefit in the use of extension work in this field such as that by extension food technologists or persons of related training or experience. Technological research should be valuable, as in the past, in development of improved processes. This research can help increase consumer acceptance of products or to maintain the competitive position of the product against other new or improved products. Processed food products can be considerably improved. Some products are more acceptable in processed form than fresh.

3. Maintenance of quality in the processed product

Reducing waste and spoilage in processed products is particularly dependent on proper conditions of distribution and proper use in the home (for the latter, see later section). Canned foods deteriorate, particularly at temperatures of 90-100°F. More consideration is being given at present to refrigerated storage of some canned foods for prolonging their shelf life and to preserve higher quality through a single marketing year. Frozen foods, by their nature, are temperature-dependent, and abuses are frequent enough to cause concern in the industry. There is a need for frozen food industry associations to expand their efforts to inform all groups involved, including retailers and the housewives, of the need for proper temperatures. Many other educational sources are similarly active. Education on temperature needs should be an important part of extension work at all phases of frozen food handling. While much is known from the technological standpoint, research is continuing in efforts to establish sound time-temperature schedules for frozen fruits and vegetables, as well as for poultry and pre-cooked frozen food.

4. Convenience of use

Processed fruits and vegetables can increase the competitive position of crops by providing convenience for user. Uniformity of product is a prime consideration here, since both the manufacturer and the housewife want to be able to count on certain attributes each time the product is purchased. Standardization of container size is an important objective of the frozen food industry.

5. Expansion of world markets

Processing of food, through product stability, permits export trade in certain perishable fruits and vegetables. It also permits the importing of products which are not available in an acceptable fresh form because of quarantine restrictions. Marketing efforts along these lines should be encouraged.

II. Standards and Quality Control

The group recognized that there are many phases of quality control. Only three areas of qulity control were discussed: grades and standards, quality control principles, and consumer selection, care, and use of food.

A. Grades and standards

1. The U. S. standards for fruits and vegetables provide minimum standards for quality levels of practical value in wholesale trading. In certain instances these standards are supplemented or supplanted by State grades or industry specifications or are adapted for specific purposes. The standards have the following common objectives:

    a. To provide a common language for the fruit and vegetable industry used in negotiations and contracts between buyers and sellers, and supply a terminology that facilitates ready identification and accurate market news reporting

    b. To provide a basis for uniform nationwide inspection and certification to obtain evidence of compliance or noncompliance with sales contracts which may be used in subsequent regulatory action, or to obtain up-to-date information as to the condition of the product so as to determine suitability for storage or diversion or the need for prompt distribution

    c. To provide the basis for quality regulation for federal marketing orders and export subsidy programs

2. Federal, State and municipal food regulations serve to protect the consumer by requiring compliance with minimum standards of sanitation of food processing plants and tolerances for residues and other extraneous materials.

3. Use of these standards encourages the adoption of growing, harvesting, sorting, processing, packaging, shipping, storage, and distribution practices that contribute to the production and delivery to the consumer of an acceptable product.

4. Grades and standards should provide quality and size categories which have utility to producers, processors, distributors, and consumers. With few exceptions, existing grades and standards are based upon requirements of producers, processors, shippers, and wholesale receivers. Greater consideration should be given to requirements and preferences of consumers, revising present consumer standards and developing new areas for additional commodities.

    a. Quality and size requirements of the existing standards are based upon quality gradations of the commodity being produced and marketed. The usefulness of permissive standards is predicated upon their commercial application. They would have little value if they set levels of perfection which could not be obtained under normal, good, commercial practices.

    b. At present too little is known about preferences of consumers to justify attempting to establish standards based primarily upon consumers' wants.

    c. As tangible data on consumer preferences and demands become available, producers and distributors should be informed and encouraged to meet the preferences indicated. If this is economically practical and receives adequate consumer support, the style, size and quality levels involved should serve as bases for U. S. Consumer Standards.

    d. A standard nomenclature should be established for grades for all products so that users may associate any given grade with a definite range of quality. The terminology in the U. S. Standards for fresh fruits and vegetables is confusing because for some commodities U. S. No. 1 is the lowest grade, for some it is the highest grade, and in others it is the only grade.

5. There is a need for continuing research on the improvements and modifications of grades and standards and for studies on production, yield, and quality relationships. Grades and standards should be kept currently adapted to changing methods of production, handling, processing, packaging, and distribution and to changes in consumer preferences. There is a need to assist users, by means of educational programs and demonstrations sponsored by Federal and State agencies and through other available channels, to recognize quality differences and their relative values to producers, distributors, and consumers.

B. Quality control

1. There is need for more grading and inspection at both the shipping point and terminal market so that grades and quality standards will be effective to more users of the product. There would then be interest in maintaining the grade and quality of the product throughout the marketing process. For processed products, quality determinations should be made of the finished product.

    a. Measurements to determine quality characteristics may include the attributes of quality as specified in the U. S. Standards.

    b. The group recognized that an adequate sample is necessary to measure the attributes of quality or condition. The sampling procedure should be selected that will provide the information needed.

    c. Measurement and control of the factors important to quality and its preservation is required in the marketing channels, from the original processor or packer to the ultimate user.

    d. The data obtained from quality measurements should be interpreted by reliable statistical techniques and tested against established standards of acceptability.

2. Application---Packages should be clearly labeled to inform users as to grade, quality, and weight and, where appropriate, consumer packages may include instructions for care and preparation of the product prior to consumption.

C. Consumer selection, care, and use of food

1. To increase marketing efficiency of fruits and vegetables, consumers should be provided information on how to select their food wisely. This includes economic information, quality differences according to use, and nutrition data for meal planning.

2. Care and use of food in the home after it leaves the market determines the ultimate satisfaction derived from that food. This can be accomplished by having the proper facilities to maintain quality until time of use and by employing the proper methods of preparing and cooking food of varying quality. Education programs are needed to teach consumers:

    a. How to recognize factors affecting quality

    b. How to preserve food quality through proper care and use of the food in the home

3. Research and Extension agencies, State Departments of Agriculture, and industry organizations must work together to provide and disseminate information on ways and means of maintaining the quality made possible by efficient marketing of fruits and vegetables.

Conclusion

The job of developing suitable quality standards and of getting growers, packers, processors, shippers, and others in the industry to use better practices requires the cooperation of all agencies and the personnel engaged in research, extension, and service work. Further, to maintain quality and improve the marketing efficiency of fruits and vegetables, it is recommended that technological specialists in the fruit and vegetable areas work with marketing specialists as a team.

Group IX recognized a whole series of problems which might be classed as human and organizational relationships which may affect both marketing efficiency and quality maintenance, sometimes seriously so. These would include things such as local customs, labor relations and jurisdiction, organizational procedures, sales and credit regulations, and many similar things of a rather intangible nature. However, because of lack of time and the probability that other groups would consider at least some of these, Group IX did not include them in its discussions except in an incidental way.

Report of Work Group X

RELATION OF POULTRY AND EGG QUALITY MAINTENANCE TO MARKETING EFFICIENCY

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Introduction

Producers, marketing agencies, and consumers have the task of preserving high egg quality until the time of ultimate consumption. In considering egg quality, this group dealt with the problems encountered from the time the egg is laid. For poultry meats, the group considered the quality problems encountered from the time assembly of the birds commences for shipment from the farm. Recognition was also given to the breeding and management factors important to quality maintenance.

The group generally agreed on the factors presently recognized as contributing to better quality maintenance. In the case of eggs the major factors were: (1) the use of proper management practices to produce clean eggs; (2) frequent collection and rapid cooling; (3) proper temperature and humidity control in farm holding rooms and at all other concentration points including retail stores and consumer premises and in transit between these points; (4) adequate containers and proper handling practices at all points to minimize breakage and quality deterioration; and (5) frequent delivery and rapid movement through marketing channels.

Losses, waste and spoilage in marketing poultry meats are minimized when: (1) care is exercised in handling live birds to prevent bruising or maiming and to reduce weight loss; (2) processors use plant sanitation, processing and chilling techniques which prevent or minimize bacterial contamination; (3) birds are picked cleanly and properly cut and packaged; and (4) proper refrigeration and icing are available and properly used in market channels, in storage, and on consumer premises.

Economic Factors in Improvement

Producers and handlers of poultry and eggs usually will not make the effort nor investment to improve quality maintenance unless they can realize profits through reduced costs and increased efficiency brought about by less loss, waste and spoilage, or through sufficiently higher prices to pay for the facilities and labor required to maintain quality. Doubtless, there is a point of diminishing returns at which efforts to further improve quality maintenance methods will not contribute to profits or efficiency. But the group took the view that further improvements are justified from the standpoint of efficiency. However, additional cost and efficiency studies are needed to determine the economic implication of such improvements. There were many personal observations of those present of the growth and success of the industry where the best techniques were observed and its decline where improved methods were not adopted. Such observations stood out most sharply for eggs. Apparently quality improvement has been somewhat more widespread and progress more uniform for poultry meats.

The observation that continued improvement in quality maintenance will contribute to increased profits or marketing efficiency has limitations when applied to specific producers or firms or certain areas or States. The lack of ability of the market to absorb or pay for high quality may lead to the adoption of uneconomic investments. The problems of quality maintenance require a different approach in commercial areas than in non-commercial areas and in areas with and without a quality purchase program. Because of lack of price incentive or lack of sufficient volume to result in a significant increase in over-all profits, farmers or handlers in non-commercial areas and in areas without a quality purchase program might adopt measures and make investments somewhat less than those designed to achieve the maximum in quality preservation.

In developing programs for improved quality maintenance, there are a number of factors which hinder obtaining that goal with maximum speed and efficiency. One important problem is the lack of uniformity in the provisions of the various State laws with regard to standards, grades, and weight classes, and the terminology used in their promulation. Some States establish laws in which certain grade restrictions have the objective not only of improving quality to strengthen the competitive position of the producers in the State, but also of establishing barriers to out-of-State products in local markets. State barriers frequently slow or impede the flow of poultry and eggs from surplus to deficit areas. These contribute to inefficiencies and waste and reduce the supply available to deficit areas. And lack of uniform teminology and specifications for standards and grades is a deterrent to efficient pricing and rapid and effective trading between buyers and sellers.

Another problem hampering progress in quality programs is the comparatively small proportion of poultry and eggs sold on a quality or grade basis. Trading on a quality basis at all points of exchange provides the necessary price incentive for the adoption of improved methods. The success of grading programs is dependent upon a thoroughly coordinated program which includes: (1) paying producers on a graded basis for quality and weight; (2) trading on a graded basis by handlers, assemblers, packers, processors, and wholesalers; (3) selling only graded and labeled eggs at retail; (4) providing consumers with adequate information regarding grades and weight classes; and (5) employing proper quality maintenance facilities at all points in the distribution system.

A third problem is the inadequacy of market reporting covering the price differentials between the various grades. In addition, terminal price quotations are not completely representative of the local price situation because of the trend toward direct selling and the bypassing of terminal markets. This contributes to unsound decisions relating to the profitability of better quality on the part of producers and handlers.

Fourth, there remains a need for further research to help producers, handlers, service, and educational personnel to determine the direction of quality programs. These will be elaborated on in the following section.

I. Recommendations for Improving Quality Maintenance and Marketing Efficiency

A. Service and educational activities

1. All interested Federal and State agencies should cooperate with industry in developing uniform standards, grades, and weight classes, whether voluntary or mandatory, and uniform terminology.

2. Adequate enforcement of State egg and poultry laws should be provided.
3. Trading on a grade or quality basis at all points of sale should be established.
4. With the development of trading on the basis of quality and grade, service and educational work should be increased to encourage and assist

producers, handlers, and retailers in installing the required facilities and adopting the best known techniques. Concurrently, consumer education should be expanded.

5. Poultry and eggs should be properly identified as to quality in retail stores.

B. Research

1. Research should be undertaken to clarify the effect of shell egg cleaning on egg quality in regular market channels involving short-time holding. This study should include the basic facotrs underlying the physical deterioration in quality and how this deterioration can be controlled. In addition, an economic evaluation is needed of the various cleaning methods, including the extent of losses in quality resulting from each method.

2. Studies should be expanded to determine processing yields and meat yields from poultry of the several grades and classes and the possible economic impact on the processor and consumer.

3. Human nutritive values of the several grades and classes of eggs and poultry should be determined.

4. Research to determine the temperature-humidity relationship for the holding of eggs should be expanded. Both the effect of physical quality loss and the economic desirability of preventing such losses should be considered.

5. Studies aimed at improving work methods, equipment, and facilities and reducing labor costs in poultry processing and egg handling plants should be expanded.

6. Studies to develop more economical utilization of poultry and egg waste and byproducts should be increased.

7. Research to establish fundamental environmental requirements for poultry products in relation to their packaging should be expanded.

8. Research on mechanical grading of eggs should be expanded.

9. Research to determine the extent of and economical importance of injuries to live poultry under present marketing conditions should be initiated. Study should be made of the extent to which these losses can be economically reduced.

Report of Work Group XI

DEVELOPING A LOCAL AREA MARKETING PROGRAM IN AND CONTIGUOUS TO A COUNTY WITH A LARGE URBAN POPULATION

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Introduction

The objective of this work group was to develop an integrated program to improve the marketing of agricultural products in an area with a large urban population, as typified by the Louisville area.

The Louisville metropolitan area has a population of about 650,000 with a retail trade area approximating a million people. This trade area serves 19 counties in Kentucky and 7 counties in southern Indiana. Of this total, 531,000 reside in Jefferson County. During the period 1940 to 1954 the population in Louisville and Jefferson County increased by 146,000 and present indications point to an even more rapid increase in population in the next decade.

The fact that Louisville is centrally located geographically relative to the North, South, East, and West contributes to its importance as an industrial and trade center. Louisville is a natural center of trucking for north and southbound traffic with 100 truck lines serving the area. It is served by 9 major railroads and 4 common carrier barge lines and numerous contract haulers.

The 26-county trade area outside of Louisville is largely agricultural with general farming predominant. For the whole area, 20 percent is classified as farm. The number of farms in this area is approximately 44,000, comprising some 4,500,000 acres. In 1953 the agricultural income amounted to $180,000,000, and the income of all industrial employees who are either processing agricultural products or manufacturing products for farm consumption amounted to about $346,000,000.

The major sources of cash farm income are from livestock, including dairy, beef cattle, hogs, sheep and poultry, and from crops, including tobacco and horticultural products. Corn, small grains, hay and pasture are widely produced but are primarily marketed through the livestock and livestock products sold from the farm.

Sources and Kinds of Available Data

Data from all available sources should be assembled for analysis of the marketing problems.

Among these sources are the U. S. Agricultural Census Reports, and the estimates of the USDA Crop Reporting Board. The periodic Census reports give primary data on farm numbers, acreage, scale of crop and livestock production, and other information on a county or area basis. Current figures on crop and livestock production are available in reports issued during the year by the Crop Reporting Board of the USDA, and the office of the State Statistician. County estimates are often available where this work is conducted cooperatively with a State agency, as in Kentucky. Many other types of localized data on population, employment, income, etc., are available in other reports of the U. S. Departments of Commerce and Labor.

Data on operations in the marketing area from the standpoint of handling, distribution, processing, transportation, storage, and other facilities are available from a number of sources. Among these are the daily and weekly market news reports of the Federal and the State Departments of Agriculture; consumer food marketing reports issued by the Extension Service; the records assembled by producer and trade organizations, by the different regulatory agencies of the city and State governments, and by Chambers of Commerce; and published results of surveys and studies by the Experiment Station, by the Federal or State Departments, or other agencies. (In the latter category the several surveys made in Louisville were especially useful in providing information of the wholesale marketing facilities, and how they might be improved.)

How Major Types of Commodities Are Now Marketed

Livestock

Facilities for marketing livestock from Jefferson and nearby counties in Kentucky and Indiana are adequate. Louisville has a terminal market with good buildings and satisfactory personnel for efficient operations. About a dozen commission firms operate on the yards, representing farmers in selling butcher stock and in buying stockers and feeders. There are 3 relatively large packers and 7 smaller ones. The large packers buy "direct" as well as on the Bourbon Stockyards.

In 1931 the farmers felt the need for a more personalized representation on the yards and proceeded to form a cooperative commission firm. This cooperative, although it had its ups and downs during its early years, is a leader in market practice improvement and is also a financial success. This organization handles about one-third of the livestock sold on the Louisville market.

Hogs and cattle are the principal species of livestock handled but sheep and lambs, and veal calves also are important. Auction markets are important in marketing livestock in Kentucky but they are of little importance in the area where most of the Louisville receipts originate. Of course, this does not mean that there is no competition between the two systems of marketing livestock.

Federal market news and grading services are available for the terminal market.

Dairy Products

Dairying is one of the most important agricultural enterprises of Jefferson County and the Louisville area. The Louisville milk shed comprises some 14-16 Kentucky counties and 6-8 southern Indiana counties.

Dairy products in this area are in a relatively strong marketing position compared with other major farm commodities. The Falls Cities' Cooperative Milk Producers Association is the largest marketing agency of dairy products in Kentucky and handles approximately 90 percent of the whole milk marketed in the Louisville area. The services performed by the association include testing, weighing, and laboratory checks for their producers. Field representatives frequently assist the membership with marketing and quality problems.

The milk is usually transported in cans by contract haulers to the receiving station as designated by the cooperative. In addition to the monthly fluid milk markets reports published by the association, a cream and butter release is prepared by the Federal State Market News reporter in Louisville.

In addition to the above bargaining organization, there are 23 fluid milk handlers, one cheese factory, 3 butter manufacturers, and one milk drying plant in Jefferson County.

Services of the American Dairy Association and Louisville Dairy Council are available to help promote increased consumption and improved merchandising.

Poultry and Eggs

There has been very little change in the egg marketing pattern for the Louisville area in the past several years. Poultry flocks have remained small and eggs are marketed largely on a current receipt basis.

Egg production has increased over this area during the past 15 years. About 10 percent of the production is packed in cartons, with the remainder handled in cases or in bulk. In Jefferson County about 75 percent of the commercial production goes to special outlets such as restaurants, hotels, and institutions. Seasonality in egg production frequently results in wide fluctuations in prices.

In Louisville there are 14 egg receivers, 4 egg packers, and one egg breaking and freezing plant. One firm buys on official U. S. Grades, operates a truck route, and purchases eggs on a contract basis.

The outlet for poultry in Louisville consists of 19 processors. These plants slaughtered some 115,000 head per week during 1954. None of the plants uses official grading and inspection. Most of the poultry is picked up at the farm by local buyers; however, a number of farmers provide their own transportation. There has been an expansion of broiler and turkey production in the area in recent years.

Daily market news is available for eggs and poultry with turkey information being carried in season.

Truck Crops

For many years the Louisville area has been one of the most significant commercial truck crop sections of the State. However, this production has recently shown a steady decline. This decline resulted from an increased industrial development which created a shortage of labor. Many of the truck farms have also been lost to industrial and housing expansion, and this trend can be expected to continue.

The present outlets for these products are 31 wholesale dealers, 3 chain grocery concerns, many local buyers, and large numbers of individual grocery stores. In addition, space is available on the "Hay Market" for farmers desiring to do their own selling. Because of congested conditions, lack of processing equipment, and outmoded marketing practices, these old market facilities are considered very inadequate for proper handling of produce.

Wholesale market news and shipping point inspection services are available at present. It is anticipated that receiving point inspection will become available by October 1955.

Several of the outlying counties are expanding the acreage planted to commercial crops of strawberries, snap beans, cabbage, cucumbers, and tomatoes. This may lead to further pressure on the Louisville market for outlets.

Definition, Evaluation, and Suggested Approaches to Some Marketing Problems in the Louisville Area

In developing a coordinated program for an area surrounding a large urban market such as Louisville, we start with the assumption that a large proportion of the commodities consumed in the market will have to come from outlying areas and from other parts of the United States. This involves wholesale markets for livestock, truck crops, and poultry products and other facilities for getting the commodities from the producers to the consumers.

Market Facilities

In the Louisville area there is a new wholesale produce market, an existing outmoded produce market, a relatively satisfactory livestock market, and a few scattered livestock auctions.

Some of the problems involved in these markets include providing for:

1. Sufficient land with railroad service, wide streets, public utilities and parking facilities to meet present needs and future expansion;

2. Adequate storage and refrigeration to allow for fluctuations in day-to-day supplies;

3. Satisfactory grading facilities;

4. Satisfactory market reporting facilities;

5. Adequate office space; and

6. Assembly hall for meetings, demonstrations, and training schools.

When a new facility is established like the new produce market in Louisville, a program needs to be developed to show producers and wholesalers how to use the market, how to manage the market, and how to prepare for increased growth and changing market conditions. Consideration should be given to the flexibility of the new facilities.

Also, thought should be given as to whether prepackaging should be done in the market or in the producing area. The possibility of handling commodities other than truck crops in the new market should be considered.

Many Federal and State studies have been made on all types of markets and help is available from these Federal and State sources for setting up new markets and revamping old ones. It is recognized that considerable background material would be required and that extensive studies would be needed before recommending any changes in present market facilities. For instance, two complete studies were made before the new produce market was finally constructed in Louisville.

Producers

Also recognized is a need for an integrated marketing program for producers in an urban area.

One of the main marketing problems in an area with a large urban population is that nearby farmers have less advantage on the market because of proximity than formerly. In fact, for many items featured in advertising for mass distribution in metropolitan areas, local producers are at a disadvantage in competing with shipped-in products. Consequently, they now need to change their practices to meet the situation.

Some of the problems involved are:

1. Producing products of the variety, type, quantity, and quality to meet market demands and competition.

2. Standardization of products by grading and packaging to compete with shipped-in products.

3. A particular problem in the Louisville area is the possible need for cooperative effort to improve marketing of fruits, vegetables, and eggs as a means of implementing unified programs to improve the assembly, handling, and selling methods employed by farmers. It may be difficult to get large, fully established farmers to join in group action on these matters when they have the equipment and market outlet, and have little desire for change.

Suggested approaches to solving the problem:

1. Because of increasing competition, products must be grown of the variety, types, and quality to meet market demands. Technological advances in production and marketing, and changes in demand, may change local marketing conditions.

2. Collective marketing by a group of producers, using improved grading and packing facilities, seems to be the indicated trend. It is felt that this type of marketing would fit very well into a marketing program for this or similar areas. Whether done by the farmer, groups of farmers, or a marketeer, it is a job that is apparently needed in order to market local products most efficiently and to the greatest benefit to the producers. The Falls Cities' Cooperative Milk Producers Association is an example of a successful cooperative marketing venture.

3. Producers need to be alerted to the problems mentioned. Demand for action must come from the producers themselves. But alternative ways of doing the marketing job may need to be brought to their attention. Research, education, and service activities can assist in this as well as in the solving of the problems.

4. Production, marketing, and retail demonstrations can help inform producers of new methods and ideas.

Processors

A marketing program in an urban area usually provides opportunity to direct a greater proportion of the effort to processing and distribution phases compared with assembly problems prevalent in rural counties. Processing problems usually introduce questions of location, taking into account the relative advantages of being close to labor supplies, transportation terminals, and consumers. Adequacy of space, water, power, and other utilities is usually important. Work with processors usually requires technological resource material which is available from Federal and State research agencies.

In the Louisville area, processing needs seem to be adequately met. Most local produce, with the exception of milk, is consumed fresh, without processing.

Consideration needs to be given as to what segment of the marketing system should be concerned with processing and prepackaging. Closely related work with wholesalers concerns itself with the most advantageous place to prepackage and with technological work on quality maintenance. County workers will usually find biologists and economists available and willing to provide advice on related problems.

Retailing

Retailing is an important link in the marketing chain, inasmuch as a large share of marketing costs are incurred at the retail level. A program designed to make the retailer more efficient by reducing his waste and costs of operation should therefore be a part of any area marketing program.

Governmental and private agencies are engaged in research to determine ways to improve the operation of retailers through better use of equipment, better store layout, proper methods of receiving, checking in, price marking, and other retailing problems. Dissemination of these results through a retailer training program is desirable.

Such a retailer program can also be an effective entree to cooperation from retailers on phases of the program designed to be of more direct benefit to producers and/or consumers. It can help to gain the confidence and respect of retailers from the standpoint that their own interests are not being overlooked.

Market Information

Marketing information is a vital part of a marketing program for an urban area. Of necessity, marketing information cuts across all segments discussed. Consideration should be given to supplying producers, wholesalers, and retailers with more reliable, up-to-the-minute information on supplies and prices (both local and terminal markets). Also, marketing information is needed regarding new varieties, grading, packaging, consumer demand, preference studies, and other information vital to the orderly marketing of agricultural products. Many studies are under way to facilitate the flow of marketing information.

Consumer Information

Informed consumers are essential for a marketing program in urban areas. In densely populated areas, mass media methods stand out as a means of helping families to make wise food purchases. Considerable consumer education work is currently being done in Louisville and the surrounding area. Information is provided to the public on supply, price, selection, nutritive value, home care, use, and preservation of food.

Ways of reaching consumers with food marketing information include news releases, homemaker newsletters, retail store handouts, and radio and television programs. Service to local food editors and to Extension agents in nearby counties helps expand the program. There needs to be continued cooperation among all agencies to aid in disseminating information to consumers.

General Conclusions

The resources of research, education, and service agencies need to be focused on the following areas of work to develop a satisfactory marketing program in an area with a large urban population:

1. A program to demonstrate proper methods of handling at the farm and at the receiver, retailer, and consumer levels.

2. Production of quality products and the maintenance and identification of quality products through all channels to the consumer.

3. A review of the standards and grades that are available for identifying qualities of products to aid buyers and sellers trading in the markets being considered. Estimates are needed of the cost and benefits that would be involved in introducing new or different grading services based upon such standards, so that intelligent recommendations can be made to the market participants.

4. Assistance to groups of retailers, wholesalers, or other handlers in securing and using properly equipped facilities and aid to these groups in solving their assembly, preparation, and distribution problems. This should include assistance in organization of farmers to provide group action, where desirable, for improving marketing conditions (e. g., as in the contemplated egg cooperative in the Louisville market).

5. Identification of applicable regulatory laws, analysis of their effects upon the marketing methods, and determination of the needs for adjustment to facilitate the proposed programs with due regard to sanitation, health, possible fraud and deceit, and other protection needed for orderly marketing.

6. Attention to expanding outlets and effecting economies in methods of preparation, handling, and distribution.

7. Continued and increased emphasis in the field of consumer education to achieve better buying habits through better recognition of quality and grades, economical and nutritional values, and maintenance of quality through proper care and preparation in the home.

Report of Work Group XII

DEVELOPING A LOCAL AREA MARKETING PROGRAM IN A RURAL COUNTY WHERE SEVERAL NEW CROPS ARE BEING INTRODUCED
(Pulaski County, Ky.)

Members of Work Group

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Introduction

As Kentucky is a land of diversity, so is Pulaski County. Fourth largest of Kentucky's counties in area and first in number of farms, Pulaski ranges from rugged territory to gently rolling land. Forests and bottom land, hills and valleys, good soil and poor, prosperous farmers and those not so prosperous combine to make it a land of contrasts.

The People: Known as "native" stock, the people are mostly of Anglo-Saxon descent. They are people with high moral and spiritual standards. They have high ideals for their land and their region. While much of the county offers somewhat limited opportunities for farming, more and more of these people have adopted new and improved agricultural practices in recent years. The people have become more receptive to new ideas, new crops, new methods and opportunities as a result of agricultural educational efforts.

Many cultural improvements have been made. Churches are good, though many of the rural churches are small. Schools are being improved. Farm people, businessmen and others have joined together and are constantly bringing about improvements.

An important contribution has been made to agricultural improvements by the Agricultural Extension Service which has been in existence since 1915, when the first County Agricultural Agent was employed. For several years there has been a home agent and an assistant agricultural agent. More recently, a strawberry specialist and a poultry specialist have their headquarters in Pulaski County and are working in several counties in this area. There is a strong 4-H Club program. An active program of farm and home development is currently being carried on.

The Land: Pulaski County is roughly 40 miles square. It has a land area of 403 thousand acres, two-thirds of which is in farms. Of the 4,591 farms in the county, more than 3,000 have less than 30 acres of cropland. The average size of farms in the county is about 64 acres. Eighty-five percent of the farms are owned by the operators; only 15 percent are tenant-operated.

The county is predominantly rural. Somerset, the county seat, is the largest urban center, with a population of 10,000 in the city and suburbs. Until the last decade poor roads have been a handicap, particularly in the rural areas, but much improvement has been made. A long-range road building program is now underway. Eventually all of the county will have all-weather roads. Major highways bisect the county north and south and east and west. In addition, the county is served by the Southern Railroad which traverses it from north to south.

Cumberland Lake, formed by the Wolf Creek Dam, has a tremendous influence on the economy and people of the county. Over 100 miles long, with a 1,200 mile shore line, this man-made lake attracts tourists from all States of the Union. The tourist trade has brought new sources of income to the county.

Agriculture in the County: Pulaski is a county of many small farms. Over 60 percent of the farms have gross annual sales of less than $1,000 per farm. Tobacco is the major value crop. About 90 percent of the income from sale of field crops is from tobacco, and over half the farm income in 1950 came from sale of field crops. Some corn and small grain are also sold. Corn acreage has decreased while improved pastures and meadows have increased.

Dairy and poultry production are two important sources of farm income, although income is also derived from the sale of beef and dairy cattle, hogs, sheep, forestry products, fruits and vegetables. General farming is the principal type. Commercial farming has increased in recent years although small general farm operations continue to dominate. How to improve the economic position of farm families by helping them to utilize their resources more fully is a major challenge.

Developing a Sound Marketing Program

Developing a marketing program is an important phase of improving the economic position of farm people in the county. Fundamental improvements in the marketing and production of such farm commodities as tobacco, strawberries, and dairy products have already been made. Additional improvements in their marketing is needed as well as a marketing program for other recently introduced crops in the area.

Consideration was given to the market possibilities for snap beans, tomatoes, cabbage, cucumbers, and strawberry plants. The problems of marketing poultry and poultry products, and dairy products were also considered. In view of this situation consideration was given to the procedures for the development of a sound marketing program for these crops.

In looking toward the improvement of an area marketing program, a realistic approach based on research and experience must be used.

Some of the questions that need to be considered in connection with each agricultural enterprise are:

1. Does the enterprise have a competitive advantage over other enterprises in the area?
2. Is sufficient local labor available?
3. Do the marketings have a minimum of competition from other areas?
4. Does the enterprise combine advantages with other farm enterprises?
5. Are production practices and costs known?
6. How much additional capital is required?
7. If farms are small (as in Pulaski County), does this increase employment opportunities?
8. Is there a reasonable assurance of a market?
9. Do the people have adaptability to new activities?

These questions and many others, may be used as criteria for determining the possible success of the enterprise.

In Pulaski County there is an abundant supply of labor. The people have the need and desire for additional sources of income to improve the level of living. They are willing to learn new practices and will follow leaders in whom they have confidence. There appears to be a real opportunity to help other "Pulaski Counties" by developing a marketing program based on research and experience and which is adapted to the economy of the local area.

Procedure for Developing an Area Marketing Program

I. Recognition of problem

    A. Recruitment of forces

        1. Bringing together of interested persons

    B. Survey

        1. Collection and evaluation of data
        2. Utilization of research findings

II. Presentation of situation to people

    A. Nature of supply

        1. Local supply
        2. Competing supply
        3. Seasonality
        4. Units of production
        5. Location of production
        6. Production alternatives, locally and in competing areas
        7. Quality
        8. Number of producers
            a. Range in size

    B. Nature of demand

        1. Local, regional, national, foreign
        2. Elastic or inelastic
        3. Adaptability of product to promotion and advertising
        4. Market uses
            a. Fresh
            b. Processed
            c. By-product
        5. Seasonality
        6. Competition from other products and other forms of the same product

7. Nature and characteristics of the trade with which business would have to be done
8. Increasing or decreasing demand

C. Marketing services

1. Assembly
   a. Transportation
   b. Points of assembly
2. Grading and handling
3. Inspection
4. Packaging
5. Storage
6. Selling
7. Financing
8. Transport to market
9. Processing
10. Bargaining

III. Decision of producers

A. Go ahead or drop

1. If go ahead, then elect steering committee

IV. Determine facilities needed

A. What are they?

1. Land
2. Plant
   a. Size
   b. Location
   c. Type
3. Transportation facilities
4. Equipment
   a. Type
   b. Number
   c. Size
5. Utilities

B. What is now available in the area?
(Based on survey)
(Availability of local facilities in terms of needs - Step IV A)

C. What additional facilities are needed?

V. Decision of Producers

A. Will producers use existing facilities or provide new ones or ask outsiders to provide them?

VI. Type of organization to perform service

- A. If facilities are available and farmers are willing to use them
  - 1. Organization to negotiate with owner of facilities
    - a. Committee or board
    - b. Formal organization
  - 2. Agreement as to what is to be done
    - a. Nature of services
    - b. How they are to be performed
    - c. Charges for services
- B. If facilities are not available or farmers do not want to use existing facilities
  - 1. Type of facilities needed
  - 2. Who will provide the capital
    - a. Patrons
      - (1) All patron capital, or part
      - (2) Some formal organization is required
    - b. Non-patrons
      - (1) A group of farmers
      - (2) A group of local businessmen
      - (3) A regional business organization
    - c. Federal, State, county or municipal government
    - d. A combination of a, b, or c above
  - 3. If patrons furnish the facilities
    - a. Amount of capital needed
    - b. Recruitment of capital on an equitable basis
    - c. Kind of organization
      - (1) Local cooperative
      - (2) Centralized cooperative
      - (3) Federated cooperative
      - (4) Non-cooperative
  - 4. If non-patrons provide the facilities
    - a. Committee or board to negotiate on behalf of producers
  - 5. If Federal, State, county or municipal government provides the facilities
    - a. Committee or board to negotiate on behalf of members
  - 6. Combination of 3, 4, or 5 above

VII. Decision of producers as to type of organization

VIII. Setting up of organization selected

- A. If cooperative type of organization is selected
  - 1. Incorporation
    - a. Selection of name
    - b. Draft of articles
    - c. Draft of bylaws

    2. Election of board
        a. Organization of board
    3. Function of board
        a. Establish operational procedures
        b. Hiring key personnel
            (a) Procurement of a surety bond

B. If a non-cooperative type organization is selected

    1. Committee or board is elected to negotiate on behalf of producers

IX. Procurement of facilities

A. Raise sufficient funds and arrange adequate credit

B. Determine plant location and layout, and type equipment

    1. Based on latest research to maximize efficiency

C. Contracting safeguards

    1. Performance Bonds, insurance, etc.

D. Compliance with Local, State and Federal regulations

X. Operation (business management principles)

A. Inspection

B. Advertising and promotion

C. Assistance of government in implementing operation

D. Methods of pricing

E. Methods of selling

F. Record keeping and reporting

G. Surplus control and utilization

H. Quality control

I. Personnel management

J. Pools

XI. Membership and public relations

A. House organ

B. Mass media

- C. Meetings
- D. Tours
- E. Financial reports

XII. Research

- A. Private
- B. Public
    - 1. Application of research

The procedure outlined above is adaptable for use by Agricultural Extension workers and others for assisting local people to develop a sound area marketing program.

Report of Work Group XIII

DEVELOPING A LOCAL AREA MARKETING PROGRAM FOR A GENERAL FARMING AREA (HENDERSON COUNTY, KY.)

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Introduction

The marketing program of any local area must be oriented toward the larger marketing area of which it is a part. Henderson County's marketing focus is at nearby Evansville, Indiana. Therefore, the programs outlined here embrace action and participation in the program by leadership in the Evansville marketing area outside of the county. Moreover, the suggested program is based upon a recognition that many problems of producers, food handlers, and consumers in the Evansville marketing area are not divisible from those of the same groups throughout the Nation.

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[1] Members participating in this group workshop represented research, Extension, State Departments of Agriculture, the United States Department of Agriculture, Canada, and Puerto Rico. Their experience varied from only a few months to 30 years. This report was participated in by all members of the above group. This is a majority report and does not necessarily represent the views of all on all subjects.

The basic aim of this program is to maintain and expand profitable markets for farm food products, within a framework of efficient production and marketing that will satisfy the needs and wants of consumers. This aim can best be realized by developing a continuously wider area of agreement and cooperation between farmers and other groups in our economy, based on general understanding of the goals, services, and problems of each.

In addition to a commodity marketing program, there is need for an intensive educational program in agricultural policy in Henderson County. Farm people of one county cannot determine agricultural policy, but they need to understand what is involved. Farmers tend to confuse the general price level with marketing efficiency. There is a serious situation now due to the price-cost squeeze, but there are many other factors which need consideration in a long-term agricultural program.

There have been serious maladjustments in agriculture due to wars. Although it is 10 years since the end of World War II, further postwar adjustments are needed in agriculture. Changes in consumption and consumer habits, mechanization, changes in transportation, refrigeration, and storage all have had an impact. Rural people need to be aware of the dynamics in agriculture and in rural living and the interdependence of producers, handlers, processors, service groups, and consumers in an efficient economy which will lead to higher standards of living.

Henderson County Situation

Henderson, the county seat, is across the Ohio River from Evansville, Indiana. It is 130 miles from Louisville, 300 miles from Chicago, 190 miles from St. Louis, 250 miles from Memphis, and 150 miles from Nashville. The railroad crossing of the Ohio River at Henderson is the only one for an expanse of 80 miles. The county has 65 miles of river boundary. Fifty thousand acres or one fourth of the crop area is bottom land. The upland is valued from $250 to $300 per acre. There is some oil industry in the county and this influences land values.

Main crops are corn, wheat, soybeans, and tobacco. Livestock production consists of beef cattle, hogs, and sheep. Tobacco is not as important in this county as in other areas of the State. The full allotment is used for burley. Growers are satisfied with acreage controls and price supports on tobacco. The bottom land is used for corn and bean production. Bean yields average 18 bushels and corn yields average 45 bushels. Dairy and poultry enterprises are not important sources of farm income.

Henderson County has a population of 32,000. Only 10,000 of these people live outside of Henderson. There are 1,400 farms in the county, including 300 part-time units. The county is a good agricultural county and the standard of living is above average. Only a small amount of the production in Henderson County is consumed in the county.

Industry in Henderson County consists of:

1. Oil, 2,600,000 barrels
2. Coal, 600,000 tons
3. 1 saw mill
4. 1 tack factory
5. 1 electric power station
6. 1 T. V. station
7. River barge lines
8. 3 trucking companies
9. 3 elevators
10. 5 feed mills
11. 1 ammonia plant
12. 1 fertilizer mixing plant
13. 1 soybean cooperative
14. 2 tobacco warehouses
15. 1 cotton mill
16. 1 coffin factory

This information about Henderson County was obtained from Census reports, ASC, and the Chambers of Commerce by Stuart Brabant, county agent, and James E. Criswell, Agricultural Economics Department, University of Kentucky. They also obtained data from a survey of farmers, processors, buyers, stockyard personnel, and retail stores.

The primary agricultural problems in Henderson County were reported to exist in grain and livestock marketing.

Steps in Developing A Marketing Program

Members of this work group generally agreed that there are certain basic steps that might be utilized in developing a marketing program for any general farming county. These steps are listed as follows:

A. Define the problem

B. Conduct the survey

C. Determine alternative solutions

D. Initiate action

E. Follow-up and evaluate results

The remainder of this report will be devoted to illustrating how these steps can be applied to the marketing problems of Henderson County, Kentucky.

A Suggested Outline for the Program

The specific problem considered in this outline is the marketing of "problem" calves--milk and grass fed calves sold each fall at heavy discounts. Production of these calves in the county increased sharply during the war and immediate postwar period, when they could be sold at attractive prices. Henderson County farmers now produce a large number of "problem" calves.

Below is a suggested outline for considering this marketing problem:

I. Problem as voiced by farmers ("problem" calves)

  A. Attention to problem by county agricultural agent

    1. Informal talks with producers to determine general belief in existence of problem and to determine its indicated scope

    2. Talks with packers to learn their views

    3. Talks with retailers to learn their views

  B. Meeting of beef producer leaders to discuss the problem

    1. Low price from packers

    2. Need for action

II. Organize leadership to consider problem further

  A. Groups represented

    1. Packers

    2. Retailers

    3. Chambers of Commerce (Henderson and Evansville)

    4. Producers

    5. Extension Service--marketing specialists and county agents

    6. Consumers--representing organizations

    7. Mass media--newspapers, radio-television, magazines, trade papers

  B. Discussion of problems as related to:

    1. Producers

    2. Processors and handlers of food commodities

    3. Consumers

    4. Well-being of entire community

  C. If additional facts are needed to define problem, committee makes decisions related to:

    1. Types of facts needed

2. Who should collect them
3. How and from what sources facts are to be gathered
4. When data are to be ready for use
    a. Date of next meeting

III. Meeting of Committee
  A. Report on data collected
  B. Discussion and analysis of situation
  C. Agreement
    1. On existence of problem and what it is
    2. Interest of the entire group in attacking the problem
    3. Appoint subcommittees to explore possible courses of action
      a. Set time limit--date of next meeting

IV. Meeting of Committee to discuss alternative lines of action based on report of subcommittee
  A. Producers
    1. Shaping production of beef to market demands
      a. Wider use of market information
        (1) Market news
        (2) Outlook information
        (3) Research findings
      b. Profitable changes in management practices
        (1) Possibilities
          (a) Reduction of number of "problem" calves
            1) Changes breeding season and carry calves through winter for sale in fall as young beef
            2) Shift out of milk-fed calf production into beef production by use of beef breeding stock

- (b) Alternative lines of production

- B. Food handlers
  - 1. Improvements in processing plant facilities and practices
  - 2. Improvement in beef merchandising efforts
  - 3. Improvements in buying practices
- C. Consumers
  - 1. More and better information
    - a. Retail grades of beef
    - b. Seasonality of production
    - c. Home refrigeration of beef
    - d. Cost comparisons relative to various cuts, processed forms, and grades
    - e. Nutritional value of beef and place of meat in daily meals
    - f. Proper ways to cook different cuts and grades of beef
    - g. Consumer preferences, and how these are reflected back to handlers and producers
    - h. Progress being made in and services being rendered by the marketing system
    - i. Marketing efficiency and costs
    - j. Farmers' share of the consumers' food dollar
    - k. Farm efficiency and costs

- V. Develop a plan of action and arrive at solutions
- VI. Evaluation
  - A. Periodic analysis of results by interested groups
  - B. Preparation of written evaluation report
    - 1. Report filed by county agent's office for future reference

(Note: Evaluation would provide an opportunity to make changes in procedures that would provide for changing conditions and continued progress toward further improvement of marketing efficiency in the areas involved.)

VII. Change future plans of action according to findings of the evaluation

Hog Market Program

Hog producers have expressed belief that a hog marketing problem exists in the county. They state that hog prices show undue variations from day to day. Determination of the existence of this problem and of its scope can be carried out in about the same way as outlined for the beef marketing problem. If the examination shows there is a problem in this area, further study can be made of the possible courses of action.

Corn Marketing Program

Some corn producers do not understand that every bushel of ear corn does not shell out to 56 pounds. For this and other grain problems the same procedures as outlined above may be used.

Because more services are involved for grain between producers and consumers than is the case for livestock, the degree of common interest between all groups is modified. Therefore, changes of procedure would result in eliminating steps for some problems and adding steps for other problems.

The particular problem here might largely be that of grading and quality. On this basis the following alternative solutions were suggested:

1. Government grading at points of delivery

2. Education of farmers by demonstrations that different grades shell out at different weights

3. Shell out on the farm

This problem would have no particular consumer or processor interest. Action programs would be limited to producers and buyers.

Soybeans

There does not appear to be a marketing problem now, but study can be given to the present grading system.

Tobacco

Marketing tobacco is a State-wide problem, and much work has been done on it. More research work needs to be done before further recommendations can be made.

Consumer Education

The marketing program for this area would be incomplete without a program for consumer education. The Henderson-Evansville marketing area involves two States. The local market area consists of Henderson, Kentucky, with 22,000 people and Evansville, Indiana, with 135,000, together with the rural population surrounding them. It would be desirable to initiate a consumer marketing program in this consuming center rather than on a county basis. This would require joint action between Kentucky and Indiana in a project of regional nature. Consumer marketing would involve two major phases:

(1) A program to assist consumers in "wise buying for maximum satisfaction of their wants"

(2) A program to disseminate marketing facts to the public as a means of attaining the goal of greater efficiency in the marketing system

If funds and other conditions in the consuming center do not permit employment of personnel to work specifically on consumer marketing; procedures should be followed which would include consumer marketing in the over-all county marketing program.

Efforts should be made by the county extension personnel to obtain all possible help from State and regional consumer marketing specialists, especially through use of news releases, folders, and so forth. These should be designed for use locally by county extension personnel or through them by commercial home economists, home economics instructors, and other potential local leaders in this phase of marketing work.

General Observations

1. Adequate procedures need to be designed for marketing the variable grades of farm products at a profitable price without interfering with the price of the high quality produce.

2. In the administration of the marketing program consideration needs to be given to the delegation of responsibility within each interested group.

3. Probably more time should be devoted to organization and methods of marketing as well as subject matter involved.

4. An effort should be made to coordinate the various phases of marketing as they involve research, services, retailing, and consumer acceptance of products.

5. It might be advisable to establish a committee at the producer level to serve as a communicating link between producers and the county extension agent.

6. All agencies that can help with the problem should work together as a team to foster better understanding of the role of leadership in marketing program.

7. Careful attention should be given to the problem area in order to evaluate the necessity of asking the cooperation of interest groups outside the local area.

8. In most areas more field research is needed to solve current local marketing problems.

9. Consideration needs to be given the credit and financial situations of a given area.

10. Better use of input-output relationship studies should be made and more records are needed as to current cost of production of agricultural products. Also, the net income of alternative crops should be known.

11. Results of this workshop should be segregated according to interest groups and should be published in a form that will facilitate distribution to all interested workers of all marketing agencies and organizations.

RESOLUTIONS ADOPTED BY THE NATIONAL MARKETING WORKSHOP AT ITS GENERAL SESSION, JUNE 24, 1955

I. We, the participants in the 1955 National Workshop on Agricultural Marketing, individually and collectively, express our sincere appreciation and gratitude to all who have made this Workshop an outstanding success, and more particularly:

1. To the Joint Land-Grant College - USDA Committee on Training for Government Service for having sponsored this seventh Workshop on agricultural marketing.

2. To the Experiment Station Committee on Organization and Policy and the Extension Committee on Organization and Policy of the Land-Grant College Association, to the Commissioners, Secretaries and Directors of State Departments of Agriculture and to the Agricultural Research Policy Committee of the USDA for endorsing this Workshop.

3. To Dr. Herman L. Donovan, President of the University of Kentucky, and to Dr. Frank J. Welch, Dean of the College of Agriculture and Home Economics for extending an invitation to the Workshop and making available the excellent facilities of the University for conducting the meetings.

4. To Barnard Joy and to Arthur W. True, secretaries of the Advisory Committee, for their tireless efforts in making arrangements, organizing and supervising the conduct of the Workshop.

5. To Harry C. Trelogan and to the Program Planning and Advisory Committee for a well planned, integrated and stimulating program involving the interests of researchers, Extension and State Departments of Agriculture personnel.

6. To Aubrey J. Brown, C. D. Phillips and the other members of the staff of the Department of Agricultural Economics of the University of Kentucky for their diligent attention to the numerous details that made our gathering here pleasant, productive, and enjoyable. We especially thank them for arranging for transportation; a browsing library; and for planning special events such as the picnic, Sunday tour, and the evening banquets which contributed so much to our enjoyable stay on the campus. We also extend our sincere appreciation to the graduate students of the Agricultural Economics Department who were so helpful to us, as well as to Dr. Statie Erickson and her associates of the Home Economics staff, who so graciously served us at the coffee hours. We are likewise deeply indebted to the Secretarial staff of the Department of Agricultural Economics for having prepared for our use multigraphed copies of the lectures, group reports, and other materials.

7. To the Group Leaders, Secretaries and Consultants for their guidance and stimulation of discussion at the work group meetings and to the speakers at the general sessions for their stimulating addresses.

8. To Mrs. Gertrude M. Farmer, Secretary of the Workshop, for her pleasant and efficient handling of registration and other secretarial activities.

9. And to the administrators of our respective colleges, agencies and departments who made it possible for us individually to attend this very worthwhile Workshop.

II. In view of the opportunity which these Workshops afford in the interchange of ideas, discussion of theoretical and practical issues of agricultural marketing, of methodology and new approaches to the solutions of marketing problems, and the general benefits derived from participating in these Workshops, we recommend:

1. That National Agricultural Marketing Workshops be continued and that personnel in research, extension, and State Departments of Agriculture be invited to participate.

2. That case-type studies be continued as a part of the Workshop Program.

3. That participants of this Workshop be encouraged to make verbal reports of the Workshop to their respective departments as soon as possible.

4. That a balance of general session speakers among industry, State Departments of Agriculture, U. S. Department of Agriculture, and the Agricultural Colleges be continued and we wish to commend the program committee for having had such balance at this year's Workshop.

Respectfully submitted by the Resolutions Committee:

H. G. Hamilton
W. E. Jones
W. J. Kuhrt
Robert E. Olson
Herbert E. Spencer
G. P. Summers
M. J. Vinson
Marvin A. Schaars - Chairman

SUMMARY

Stanley K. Seaver
Department of Agricultural Economics
University of Connecticut

Resolutions can never adequately state our appreciation to the Kentucky staff for all the long hours devoted to the planning and staging of this workshop. Neither can summaries. But by way of emphasis it seems desirable to try. To Dean Welch and Aubrey Brown and all his staff, and especially Dave Phillips, we owe a special debt for an excellently operated workshop and ask that they extend our thanks to the many unmentioned individuals.

The benefits of a workshop are indeed hard to assess because of their multiplicity and intangibility. Some 223 participants will leave with a little less dogmatism on many points, even though we may be unwilling to state so now or publicly. Many will have grasped the germ of an idea for research, extension, or service work which will grow into a worth while project at some future date. And what is even more difficult for most of us to accept is the jolt which some of our current work and ideas have received. And, of major importance, all will leave with greater appreciation of and tolerance toward the contribution which research, extension, and State departments of agriculture can make toward the solution of marketing problems.

One can come more nearly assessing the tangible results of the workshop, although no summary can adequately treat them or even list them all. It often appears that a meeting such as this is rather disjointed and that there is no consistent line of thought. And after a week of meetings we tend to become convinced this is true. If I am any judge, there have been three themes all of which are consistently and logically tied together. First is the body of economic theory which provides the foundation for analysis and work in the field of marketing efficiency. Second, and this flows from the first, the dynamic nature of marketing and its impact upon future sets of choices on the one hand and upon the type and efficiency of the marketing system on the other. And, third, our responsibility in and roadblocks to achieving efficient marketing.

The theory applicable to the deliberations of this conference was outlined at the opening session by L. L. Boger when he called attention to the title which places great emphasis on the dynamics of the economic system. Definitions of marketing and production were reviewed and economic principles of production summarized. Dr. Boger seemed to feel that considerably more progress could be made in the application of the firm production principles in the field of marketing. Attention was called to the fact that little has been done in the field of dynamics at the aggregate level. The simple principles of economics were clearly stated in terms of macro, micro, static, scale coefficients, synthetic and budgetary techniques, activity analysis, strategy principles, and others. Even such terms, if those who registered with me provided an adequate sample, left some floundering at sea. The problem of communication among what is more or less a common group needs to be given some attention. Knowledge, in the mass sense with which we are concerned, cannot progress if those charged with the educational work, in this instance extension, do not understand the terminology and concepts of the research economists.

The explicit and succinct manner in which R. W. Rudd discussed marketing research did much to clarify many possible points of disagreement before the conference was too far advanced. Marketing research was divided into two broad categories: (1) Operational efficiency and (2) pricing efficiency. Operational efficiency was subdivided into micro statics and dynamics and into macro analysis. Excellent studies under each of the classifications were referred to and summarized. For those who wish to acquaint themselves with the broad nature of the marketing system and the kind of research being done, may I recommend they study carefully this paper.

Many were glad to see that new extension programs and techniques in marketing are being explored. Dr. Kramer ably presented, in considerable detail, the operation of the Michigan adventure. Not all were convinced that this is the last word in extension marketing programs and had more time been available some of us would have wished to discuss its advantages and disadvantages more fully.

The diverse responsibility for improving the marketing system was impressed upon all by Mr. Wilkinson, chief of Markets Division, Wisconsin Department of Agriculture. And he forcefully stated that any good State department of agriculture must base its service work on sound research and within the framework of a good climate of acceptance prepared for it by extension. While no reference was made to active research carried on by the State departments of agriculture, this conference has opened my eyes to the amount which is being done. The research workers in the colleges and the United States Department of Agriculture should certainly not have a feeling of complacency if the State departments are finding it necessary to obtain answers to their "firing line" problems by doing their own research.

All of us like to dream at some time or other, whether for psychological or practical reasons. And what is more fun or fruitful than dreaming about the glorious tomorrow. The workshop delegates were first given a peak at the "next world" by W. C. Crow, who painted for us by word and pictures tomorrow's markets. The future holds for us larger retail stores, combining of wholesaling and jobbing operations, improved transportation and refrigerator cars, complete line wholesalers, markets devoted to more than just food, streamlined single-story market facility buildings, and a host of others. This may come as a shock to some, but Bill even expects the market system to provide so many services as to make maids the displaced technocrats of tomorrow. The need for vision in the future building of marketing structures and systems was certainly impressed upon the delegates of this conference.

Into this world of the future, Nate Koffsky brought forth by 1975 some 50 million little children whose origin is at present unknown. And the parents of these children will have 10 percent more leisure on their hands. Children and parents, but mostly children, will have 66 percent greater real incomes to spend. One might think with all this leisure, money, and people that the price of the now 10-cent ice cream cone will increase. But no. Nate sees the price and income elasticity of demand for food continuing its downward trend. This paper made it abundantly clear that to research and extension workers the word "dynamic" ought to be well understood and made a part of our program.

The Washington dynamo, Harry Trelogan, better known to us as Colonel, provided all of Nate's children with a marketing dream world simply by translating dynamics to automation. The future workers in retail stores will press a button and price all items. Our food will be moved over liquid media, graded by electronic eyes, contamination detected by fluorescent light, and decontamination done by atomic rays. I have yet to discover the meaning of "keydozzle" but it must have something to do with predigestion of the food. Nor do I quite understand all the implications of "built-in-maid-service" in retail stores. But one thing is understandable, namely, the need for more research directed toward answering the question what could be instead of what is.

By the time Mr. Pentzer finished explaining new developments for maintaining food quality, we were convinced this was no dream world. Food will be so fresh that for the first time we will be able to tell what lettuce and carrots taste like to the rabbits, potatoes to the wireworm, and tomatoes to the birds. If the economist thinks he can predict future demand and market organization without considering the world of science relating to quality, he should take a second look.

The one gloomy note in the dynamics of marketing is that we apparently must continue to work. Mr. Winter showed us how to achieve lower costs by reducing idle time of workers, changing plant layout, rearranging flow of product, shifting materials handling, and in other ways too numerous to mention. But pity the poor worker, for in some instances efficiency can only be increased by pulling a loaded cart instead of an empty one. And on this same morning's program Mr. Sammet cleared the air by stating that economics in the area of plant efficiency is concerned with (1) measurement, (2) analysis, and sometimes (3) innovations. But in the development the economist generally bows to the engineer and adoption may require responsibility of both. George Byers brought our enthusiasm for chasing maximum efficiency as a single goal down to earth when he asked "Is maximum efficiency what we really want?" and cautioned us that this is not always consistent with maximum profit.

Mr. Stock of Politz Research Associates raised considerable doubt about present methods of demand analyses let alone the future. He pointed out the pitfalls in determining future demand by asking people what they would buy, and insisted one must find a way of producing stimuli or reference equivalent to the situation at some future date and this is frequently impossible. The old concept of "build a better mouse trap and people will beat a path to your door" was shattered by Mr. Stock when he said, "It is not necessary to have a better product for all people." And certainly it may not need to be better from the engineering standpoint to be sold in increasing quantities. Mr. Stock exploded many misconceptions when he stated, "There is no correlation between the amount of milk which people drink and the feeling they have for its attributes." The need for revisions in techniques for doing research in future preferences or demands from those presently used was made abundantly clear. It occurred to me that it might be good strategy to consult with industrial personnel with the experience and ability of Mr. Stock.

All the changes in the marketing system have not been left to the future. Who can ever forget Mr. Douglas' dramatic demonstration of old practices with the New York dressed chicken and the abandonment of such marketing methods by heaving the chicken in the audience? Who can forget his word picture of what service means? And who can forget the visual picture of the potential demand for a product if it has the value which people desire? But what we may forget is that industry stands ready and willing to adopt new technology and marketing methods. This should leave us a little less smug when we hear that oft repeated phrase, "Yes, but industry will not adopt the new technology." After hearing Mr. Douglas, I ask, have we tried or have we seen the right man?

Assuming we have all the knowledge about this best of all worlds, and this is a somewhat heroic assumption, will it be adopted? Mr. C. W. Kitchen of the United Fresh Fruit and Vegetable Association said, "Nothing much happens until something is sold. ... So if people are to be induced to accept research results, as implied by the topic assigned to me, research results must be salable in the broad sense of that term." Industry stands ready and willing to adopt new methods under certain conditions. A great many are small business firms, and, hence, are more interested in specific research results which can be applied to their own businesses. Certainly, it will be difficult to obtain acceptance of results, or even data, if the researcher is simply looking at the whole operation of a firm with no clear-cut idea of why the work is being undertaken. And simple descriptive studies will be of little use to industry, since they are simply being told what is already known. Studies of costs and margins should be directed toward specific ways of reducing costs if the results are to receive the broadest acceptance. Specific ways of reducing handling costs, eliminating bottlenecks, adding new technology, and other similar research will be readily adopted. The delegates will leave with the distinct impression that research results will be adopted rapidly if some thought and effort is devoted to defining the problems and to the manner by which the firms can incorporate the results into their businesses.

The two anchor men to the line of thought originally mentioned, and responsible for developing the third area of consideration, are not heavyweights, physically speaking. But I believe you will agree that the general committee left little to be desired when it comes to throwing weight around mentally. The reserved, quiet, soft-spoken and unassuming Willard Cochrane uniquely tied up the responsibility of private and public marketing agencies with the decision-making activities of the firm. The controversial equity issue again reared its ugly head. Where decisions pertaining to direct action by government in the marketing system are required, this becomes a function of legislatures and not technicians and college professors. And the same holds for establishing the rules by which the game is to be played. But, just as clearly, the quantity of funds necessary to achieve a given goal and the use made of such funds is the responsibility of the technicians and their administrators. Three rules of decision making were developed: (1) Government should avoid the imposition of restrictions interfering with firm decision making, (2) some research funds in any technical field should be set aside for study of equity implications of technological change, and (3) funds should be allocated among various alternative uses in a manner leading to maximum output of goods and services not involving directly the redistribution of real income. The difficult issues raised must be more carefully studied than is possible at this time, for with only one reading the logical foundation upon which rule two rests is not readily apparent to me. I sincerely recommend its careful reading and study.

A vivid word picture of the "jerry built" foundations upon which the milk marketing system rests was provided the delegates as an example of institutional barriers to increasing market efficiency. The numerous Federal orders, State sanitary and price regulations, and other restrictions indeed strain one's mental capacity to characterize it as a system. The private-government, farmers-consumers, and dealer-farmer relationships provide an excellent example of the role of power politics and its effect on and relationship to the marketing of a farm product. Federal market orders and their potential on actual regulation of production areas is indeed an intriguing question and it is to be hoped that someone of Mr. Hardin's ability will devote more attention to this question at some future date. The same comment applies to compensatory payments in milk markets. One reason why such issues have not been adequately explored by milk marketing men might well be contained in the apt comment of Mr. Hardin when he said, "Milk marketing men are quick to make it abundantly clear that no one is an expert in the field without 20 years experience producing, living, consuming, and breathing milk." Alas it is regrettable to end the meeting on such a sad note but Mr. Hardin sees little hope, that out of the morass of present confusion, that anything much will emerge but another "jerry built" house, albeit a different one.

But I do not wish to end a summary of this conference on any such note. I have been an ardent defender of the value and a small contributor to these workshops, although much more has been received than given. I should like to make two suggestions for their continuance. Many comments in both general sessions and work groups have been made about the very real necessity of team approaches to research problems. Suggestion one: Researchers in the field of marketing be brought together and subjected to intense bombardment of outside disciplines, such as engineering and phychology, as these may contribute to unsolved problems in the field of marketing. Hybrid vigor often results from peculiar crosses. The same would appear to apply equally to extension and State departments of agriculture.

Emerging from this workshop was the clear idea that vision regarding the nature of the marketing system at some future date, including for example, facilities and their location and the quantity and kinds of resources necessary, is of the essence. And to facilitate important contributions in this area, knowledge of the supply of food forthcoming under given future conditions is a must. Price formation, the very core of marketing, requires knowledge of the supply function. And supply analysis and understanding lags woefully behind that of demand. Suggestion two: that work on supply problems,including review of tools, delineation of important problems, and many other aspects, be encouraged immediately.

Change, yes, but abandon the workshop at this time, no.

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